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PERSPECTIVES

ON LABOUR AND INCOME

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PERSPECTIVES

ON LABOUR AND INCOME

Spring 1990

Vol.2, No.1

Articles

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Michel Côté

In 1980, few people expected the depth of the 1981-1982 recession or the strength of the subsequent recovery. Still, as we started the new decade, the unemployment rate stood at 7.5% and regional job disparities remained one of the most critical problems facing Canada. We offer a look back at the trends and fundamental changes that occurred in the labour market during the '80s.

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Fred Wong

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Imagicians
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Calculating an unemployment rate based on unutilized hours offers a more complete measure of unemployment. It also results in a higher rate of unemployment. This study provides a look at what else this measure can tell us.

Symbols

The following standard symbols are used in Statistics Canada publications:

..	figures not available
...	figures not appropriate or not applicable
—	nil or zero
--	amount too small to be expressed
P	preliminary figures
r	revised figures
x	confidential to meet secrecy requirements of the Statistics Act

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Forum

From the editor

■ This fourth issue marks the completion of our first year. It also represents a beginning in several respects. For instance, you may have noticed our new cover which features computer-generated artwork based on fractals. This marriage of art and algebraic equations is the work of Ken and Bonni Evans, a husband-and-wife team from the small town of Manotick, Ontario, a few kilometres from Ottawa. Such cover artwork is appropriate since computers permeate every facet of *Perspectives* – from data retrieval and manipulation to the drafting of manuscripts and charts. The entire package is then assembled through a state-of-the-art computerized publishing system in our Publications Division.

As of this issue there are two new editors "plugged in": Joanne Moloney, who brings a mathematician's view to our manuscripts, and Michel Côté, who has special responsibilities for the French edition of *Perspectives*. We welcome these two to a rather unusual editing team where all of the editors are themselves also authors. (Having their own analysis edited keeps them humble!) Heather Clemenson, our Sources editor, has recently left us for a year on temporary assignment. Although we are sad to see her go, we thank her for her contribution to the creation and development of the Sources section of the publication.

To change the topic somewhat, those of us producing *Perspectives* like to think of

it as a market-driven publication. In its developmental stages, we consulted extensively with potential readers. Their opinions strongly shaped the contents, style and appearance of the publication. We intend to continue improving *Perspectives* by making it even better suited to your needs. To do this, we need to stay in touch, so we will be conducting a telephone survey of our readers in the Spring. A good number of you will be contacted and as a result we will have new ideas on how we can enhance *Perspectives*. Although we will be drawing a representative sample from our subscription list, I encourage any of you with ideas or opinions to phone or write to Doreen Duchesne, our editor in charge of carrying out the survey. (Collect calls made to her on this topic will be accepted. Her number is (613) 951-6893.) Results from this survey will be presented in a subsequent issue of *Perspectives*.

In this issue, there are two articles I'd like to comment on. The pension funds article uses one of Statistics Canada's lesser known but very important data bases. The data come mainly from a survey of employers and pension fund managers. This data base may be of particular interest to those of you who are working in the human resources field.

The other article I'd like to mention is "The graduates of '82" which makes use of longitudinal data, the same respondents having been surveyed twice, once in 1984 and again in 1987. The advantage of such a survey is that we can measure the change over time for each individual in the sample.

This gives us a much better understanding of the forces at work affecting these graduates in the labour market.

Finally, the following letters from our colleagues in other countries are very complimentary. We enjoy this praise, but we need to hear about our shortcomings too. Let us know if you have criticisms regarding specific articles or the data sources used. The readership survey mentioned earlier will provide us with information of this type, but Forum, which was designed for dialogue, allows you to share your opinion with your fellow readers.

Ian Macredie
Editor-in-Chief



Letters

■ Congratulations! *Perspectives* is quite impressive, from top to bottom. This is a great start. I look forward to future issues with eager anticipation; perhaps we can cop some good ideas!

John E. Bregger
Assistant Commissioner for Current
Employment Analysis
U.S. Department of Labor



■ I would like to pass on the Committee's congratulations to you and your staff for the excellent work you have carried out to produce the new publication, *Perspectives on Labour and Income*.

Robert Glossop, Ph.D.
Chair, Advisory Committee on Social
Conditions
Statistics Canada

[Bob Glossop is also the co-ordinator of programs and research at The Vanier Institute of the Family. - ed.]



■ I want to add my congratulations to those of others for your new publication - *Perspectives on Labour and Income*. The analyses in it are quite interesting, well done, and very pertinent. And the publication looks quite elegant.

Looking over the list of your recent reports, I saw that Statistics Canada has recently done one based on a survey of volunteer workers. I would like to inform you that we included some questions on volunteer work in a special CPS supplement conducted in May 1989, and we are about to receive the findings from the Census Bureau. Your report may help us in the analysis of our own data.

Again, "well done" on your new quarterly journal.

Paul O. Flaim
Chief, Division of Labor Force
Statistics
U.S. Department of Labor

[The CPS or Current Population Survey is the American equivalent to Canada's Labour Force Survey. - ed.]



We welcome your views on articles and other items that have appeared in *Perspectives on Labour and Income*. Additional insights on the data are also welcome, but to be considered for publication, communications should be factual and analytical. We encourage readers to inform us about their current research projects, new publications, data sources and upcoming events relating to labour and income.

Statistics Canada reserves the right to select and edit items for publication. Correspondence, in either official language, should be addressed to: Susan Crompton, Forum and Sources Editor, *Perspectives on Labour and Income*, 5-A Jean Talon Building, Statistics Canada, Ottawa, K1A 0T6, or call (613) 951-0178.

Highlights

Here are some key findings from the articles in this issue of Perspectives on Labour and Income.

The labour force: into the '90s

■ Labour market performance was mixed in 1989. Unemployment stalled at over a million and the average duration of unemployment remained unchanged at 18 weeks. But employment did grow by about a quarter of a million and the unemployment rate fell back to its pre-recession level of 7.5%.

■ Women comprised 44% of the labour force in 1989, up from 33% in 1969. Almost two-thirds of women with pre-school age children were either employed or looking for work.

■ The labour force is aging: 15-24 year olds made up only 20% of the labour force in 1989, down from a peak of 27% in 1974.

■ About 94% of employment growth during the last decade was attributable to the service sector, compared to 79% during the '70s.

■ Unemployment among persons with eight years of schooling or less worsened over the decade. Their unemployment rate was 11.1% in 1989, up from 8.8% in 1979. The rate for persons with a university degree was 3.7% in 1989.

High technology at work

■ High technology is popularly associated with manufacturing, yet most of the 19 manufacturing industries rank low in terms of their use of advanced technologies. In contrast, a number of Canada's service industries do rank as high-tech.

■ Between 1977 and 1986, the high-technology group produced about one-quarter of the gross domestic product in the private business sector of the Canadian economy. And one-quarter of all employees worked in high-technology industries.

■ Employees in the high-technology group had lower annual average earnings than workers in the low-technology group, due to the concentration of the traditionally better-paying manufacturing industries in the latter group.

The distribution of wealth in Canada and the United States

■ On average, in 1984, an American household held wealth of \$78,700 compared with \$66,400 for a Canadian household (based on U.S. dollars).

■ In both Canada and the United States, the wealthiest households were those where the household head was in the 55-64 age group; beyond that age, average wealth

began to decline. However, American households with heads aged 65 years and over held 48% more wealth than their Canadian counterparts.

■ Homes are usually a family's main asset. In 1984, the rate of homeownership was higher in the United States (64%) than in Canada (58%).

■ Compared to Canadians, the asset portfolios of Americans in 1984 included more stocks, shares and investments in mutual funds, and investments in rental properties and other real estate. In contrast, Canadians were more apt to have savings bonds or Registered Retirement Savings Plans.

The performance of trustee pension funds

■ Between 1978 and 1988, the nominal rate of return on pension funds ranged from 8.9% to 13.8%. The real rate of return (after accounting for inflation) was between -1.0% and 9.7%.

■ The stock market crash in October 1987 affected funds which were invested in stocks. However, strong returns in the first three quarters of 1987 more than made up for fourth-quarter losses, making the rate of return for 1987 comparable to previous years. It was not until 1988 that effects of the crash registered: the real rate of return dropped to 5.4% from 9.7% in 1986.

■ Between 1978 and 1988, the real rate of return was higher on average for private sector pension funds than for public sector pension funds. More public sector pension funds are invested in bonds (59% compared with 35% in the private sector). On the other hand, investments in stocks account for 30% of private sector funds compared with 17% of public sector funds.

The graduates of '82: where are they?

■ University and community college graduates of 1982 might have been hampered by the effects of the recession, but about three-quarters held a job in January 1983, compared with 64% of all Canadians in a similar age group.

■ Five years after graduation, about nine out of ten were employed. The unemployment rate was 3.7% for university graduates and 5.4% for the community college graduates compared with 10.5% for the Canadian work force in the same age bracket.

■ There was a strong link between field of study and subsequent employment. Five years after graduation, 87% of employed university graduates and 85% of community college graduates said they were working in a job related to their discipline.

■ Average earnings for 1982 university graduates employed full-time in 1987 were \$34,100; community college graduates working full-time earned \$25,300. The Canadian average for the same age group was \$24,400.

■ Two years after graduation, approximately 13% of the university graduates had settled in a province other than their original province of residence, compared with 6% of the college graduates. Female graduates from both universities and community colleges were just as likely as men to move to another province.

■ By 1987, the proportion of 1982 graduates residing in a province other than their home province had risen to 16% and 7% respectively.

Wives as primary breadwinners

■ In 1987, wives "outearned" their husbands in just under one out of every five dual-earner families. In comparison with other working wives, wives who earned more than their husbands tended to have a higher level of education. Three-quarters of these wives worked full-time throughout 1987 compared with just under half of the wives who were secondary earners.

■ While wives who were principal breadwinners had above average earnings, they still generally earned less than primary-earner husbands. Their contribution to family income was slightly over 50%.

■ As family income decreases, the proportion of wives who are the primary earner increases. In two of five families with a primary-earner wife, the husband made less than \$10,000 a year.

■ Nearly six out of ten husbands who made less than their wives worked full-time in 1987. The average income of these husbands was about half that of primary-earner husbands who worked full-time through the year.

Time lost: an alternative view of unemployment

■ An unemployment rate based on hours reflects time "lost" by people working part-time involuntarily as well as by the unemployed. Calculated this way, the 1988 rate for men was 8.5% compared with the official rate of 7.4%. For women, the gap was wider (11.6% versus 8.3%).

■ In addition, the gap between this alternative unemployment rate and the official rate widened between 1981 and 1988, more noticeably for women than for men.

■ The alternative rate shows slightly more movement according to season and from year to year. □

The labour force: into the '90s

Michel Côté

The year 1989 saw the labour market send out a series of mixed signals.

1989 wasn't a banner year ...

From one perspective, the "great Canadian job-machine" appeared to be running out of steam. In the previous five years, employment growth substantially outpaced the inflow to the labour force, bringing unemployment down from its peak of 1.4 million in 1983. Last year, the labour market turned in a flat performance. Unemployment rolls, which had been falling by an average of 80,000 a year since 1983, hardly budged last year, stalling at just over the one million mark. And there was no improvement in the duration of unemployment – 18 weeks on average. The pace of employment growth also slackened, especially for men. It was down by 35% for women, but by 40% for men. The prospect of finding employment also declined, as the help-wanted index fell from 154 in April to 135 in December. And in each of the first three quarters of 1989, the year-over-year rate of increase of total labour income was lower than in 1988.

... but it wasn't a bad year either

From another perspective, the labour market turned in a quite respectable perfor-

mance last year even though economic conditions were not as robust as in 1988. The rate of increase in the gross domestic product declined in each of the first three quarters; in October, the foreign trade balance went into a deficit position for the first time in 13 years; and the composite index of ten leading indicators showed virtually no movement for nine out of the first ten months of the year. But employment did grow. The number of persons with jobs increased by about a quarter of a million, and 62% of working-age Canadians were employed, the highest level on record. Virtually all of the increase was in full-time employment. Part-time employment grew by only 6,000, the smallest increase this decade. Canadians spent more time at work, averaging 38.4 hours a week,¹ up by almost half an hour from 1988. And despite the increases in the last quarter, the unemployment rate for the year returned to its pre-recession level of 7.5%.

This article is based mainly on Labour Force Survey (LFS) annual average estimates, as published in *Historical Labour Force Statistics – Actual Data, Seasonal Factors, Seasonally Adjusted Data* (71-201), and in *Labour Force Annual Averages* (71-529). In some instances, estimates were tabulated from the LFS micro-data files.

References to other series, such as the help-wanted index or total labour income, are to monthly, quarterly or annual results available through CANSIM.

Data contained in this article are as available on January 12, 1990.

Michel Côté is with the Labour and Household Surveys Analysis Division. He can be reached at (613) 951-6896.

Overall, the labour market turned in positive but modest results in keeping with the mixed performance of the economy as a whole. As we enter the new decade, a look back at major labour force trends over the past ten to twenty years may help us understand the prospects ahead for the labour market.

The labour force

The number of men and women entering the labour force is decreasing. There were only 228,000 in 1989, down significantly from the 342,000 recorded at the beginning of the decade. The rate of growth of the labour force then was 3%; it has now fallen to well under 2%.

The past twenty years offer a striking picture of changes in the growth and composition of the labour force. During the 1970s, the labour force, fed by the post-war baby-boom and rising participation rates, increased by 3.2% annually (Table 1). Contrast this with a 1.9% annual growth in the 1980s. The shrinking youth population, slower increases in participation rates and the impact of the 1981-82 recession have all played a part. But, by international standards, this is still a strong performance. Among OECD countries, Canada had the strongest labour market growth during the 1970s and was outpaced only by Iceland, New Zealand and Australia during the last decade.²

Since 1969, the greatest contributors to labour force growth have been women, especially in the 1980s. About two-thirds of the increase in the female labour force is attributable to rising participation rates exclusively and the remainder to population trends. Women now comprise 44% of the labour force, up from 39% in 1979 and 33% in 1969. For men, declining rates have had the reverse effect: their numbers are now roughly 131,000 lower than they would have

been had the male participation rate been sustained at its 1969 level.

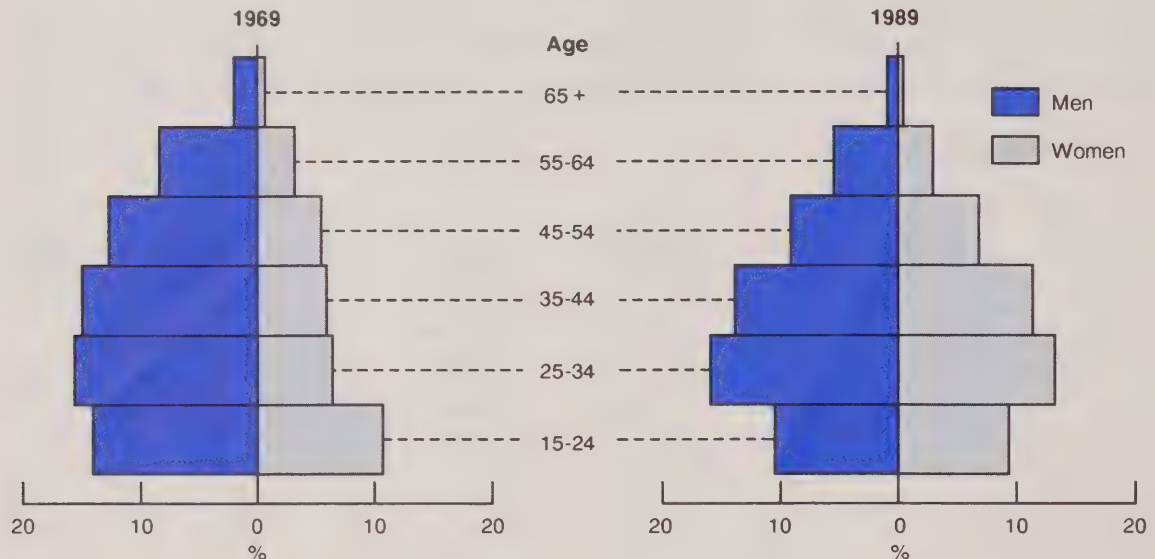
Table 1
Annual averages by sex

	Both sexes	Men	Women
	'000		
Population 15 and over			
1969	14,162	6,983	7,179
1979	17,702	8,680	9,022
1989	20,141	9,814	10,326
Labour force			
1969	8,194	5,465	2,728
1979	11,231	6,811	4,420
1989	13,503	7,525	5,978
Employment			
1969	7,832	5,230	2,601
1979	10,395	6,362	4,033
1989	12,486	6,977	5,508
Unemployment			
1969	362	235	127
1979	836	449	387
1989	1,018	548	470
	%		
Participation rate			
1969	57.9	78.3	38.0
1979	63.4	78.5	49.0
1989	67.0	76.7	57.9
Employment/population ratio			
1969	55.3	74.9	36.2
1979	58.7	73.3	44.7
1989	62.0	71.1	53.3
Unemployment rate			
1969	4.4	4.3	4.7
1979	7.4	6.6	8.8
1989	7.5	7.3	7.9
Annual average rates of growth	%		
Population 15 and over			
1969-79	2.3	2.2	2.3
1979-89	1.3	1.2	1.4
Labour force			
1969-79	3.2	2.2	4.9
1979-89	1.9	1.0	3.1
Employed			
1969-79	2.9	2.0	4.5
1979-89	1.8	0.9	3.2
Unemployed			
1969-79	8.7	6.7	11.8
1979-89	2.0	2.0	2.0

Source: Labour Force Survey

Composition of labour force by age and sex

In one generation, the shape of the labour force has been fundamentally altered by such trends as population aging, the rapid rise in female and youth participation rates, and early retirement.



Source: Labour Force Survey

One of the significant developments of the past decade was the very large increase in the participation rates of women with children under 16, up 20 percentage points to 69% in 1989, well above the 58% for all women (Table 2). In 1979, the participation rate of women with pre-school children was six percentage points below the overall rate for women. In 1989, it was four points above. These increases have taken place despite the decrease in the number of women with children under 16 since 1979. In addition, the proportion of these women working full-time has increased over the decade while the proportion of other women working full-time has decreased.

Since almost two-thirds of the women with pre-school children are in the labour force, it is likely that the provision of child-care facilities will continue to be the focus of public concern during the 1990s.

Table 2
Women in the labour force

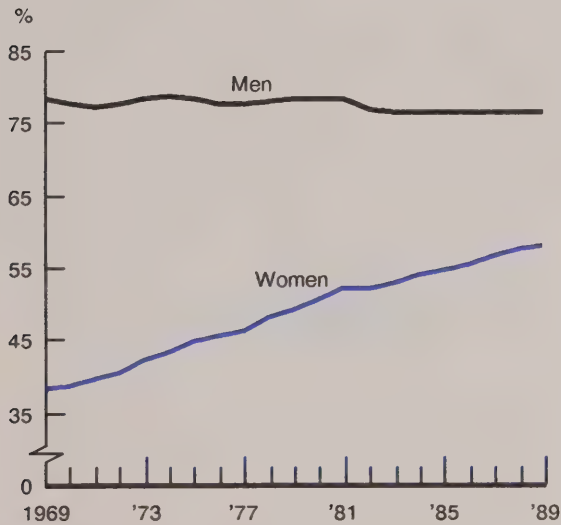
	Participation rates		Percent of employed women working full-time	
	1979	1989	1979	1989
	%			
All women	49	58	77	75
Head or spouse	48	60	77	77
With children under 16	49	69	71	73
With pre-school children	43	62	68	69
Without children under 16	46	53	83	81
Other women*	51	54	77	72

Source: Labour Force Survey

* Unattached individuals, single children and other relatives.

Labour force participation rates

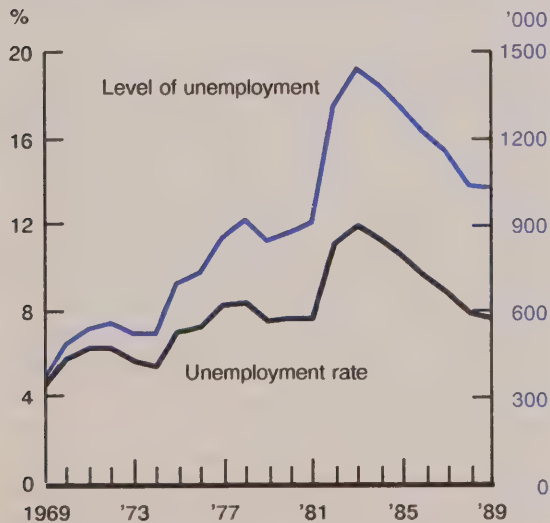
The participation rate for women has climbed steadily over the last two decades.



Source: Labour Force Survey

Unemployment rate and level

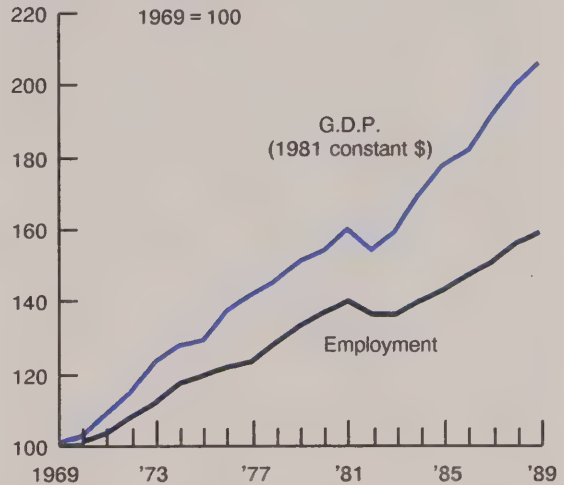
After six years of decline, unemployment is still well above the level of two decades ago.



Source: Labour Force Survey

Index of employment and Gross Domestic Product (G.D.P.)*

Over the past 20 years, G.D.P. growth has outstripped employment growth.

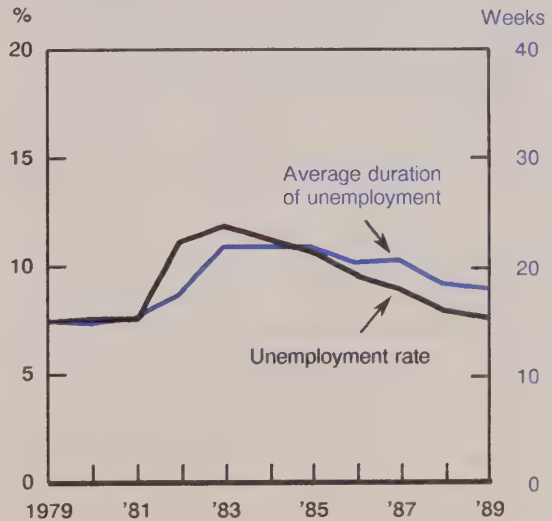


* The G.D.P. for 1989 is an estimate based on 10 months of data

Source: Labour Force Survey and CANSIM.

Unemployment rate and duration

Although the unemployment rate is down from the peak of the early '80s, the average duration of unemployment remains high.



Source: Labour Force Survey

The labour force is aging

Another major development of the 1980s has been the progressive aging of the labour force as the baby-boom generation approaches middle-age. One result has been the decline of the 15-24 age component of the labour force. It grew by an average of 3.4% a year from 1969, to a peak of over 3 million in 1981. Since then it has declined annually by an average of 1.7% a year to 2.7 million in 1989. In relative terms, this age group actually reached its high point of over 27% of the labour force in 1974 and fell to a low of 20% last year. This occurred despite rising participation rates which have helped to cushion the population decline. This rise has been especially pronounced for full-time students whose participation rate grew dramatically, from 32% in 1979 to 45% now.

Such developments have led to some suggestions³ that these students, who now account for almost a quarter of the 15-24 component of the labour force, may be taking jobs away from other young people, who are likely less qualified but more in need of employment to support themselves. Some commentators also deplore the potentially negative influence on a student's academic achievements. If studies take a back seat to working, students may jeopardize their chances of acquiring the necessary qualifications essential for long-term success in today's more demanding job market. These are important issues, but we lack the information to measure their full impact.

In addition to the rising participation rates of youth, another mitigating factor in the aging process has been the gradual but steady decline in the *share* of the 55 and over age component of the labour force. This is a phenomenon which dates back to before the 1970s and has affected men more than women. It stems in part from the post-war immigration to Canada of younger workers and the influx of baby-boomers into the labour market. But it also reflects a long-

term decline in the participation rate of this age group, from 36% in 1969 to 27% in 1989. This decline is clearly attributable to the gradual availability over the years of pension schemes with early-retirement provisions, but may also reflect the less numerous job opportunities for the unemployed in this age group as opposed to those in younger age groups.

The net effect of these influences is an increase in the average age of the labour force; it has risen from 35.5 in 1979 to 36.3 in 1989, and will likely continue to rise throughout the 1990s, unless demographic trends are reversed through more younger workers immigrating to Canada.

The workforce is better educated

The coming of age of the post-war generation has produced a better educated, more highly skilled labour force. The proportion with education beyond high school has risen from 29% in 1979 to 42% in 1989, while the proportion with eight years of schooling or less has fallen from 17% to 9%. Individuals with a university degree now account for 15% of the labour force, up from 10% in 1979. But a majority of the workforce still has no schooling beyond high school.

Growth has been uneven among the provinces

Not all the provinces have shared equally in the growth of the labour force over the past ten years. British Columbia led the nation with an average annual increase of 2.4%. Despite the severe downturn caused by the fall in oil prices and the subsequent recession, Alberta achieved average growth of 2.2% per year, ahead of the 2.0% recorded in booming Ontario and 1.9% in Prince Edward Island. In the remaining provinces, results were below the national average of 1.9%, marginally in the case of the other Atlantic provinces (1.8% each), but more significantly for Quebec (1.4%). Growth was especially low for Manitoba (1.2%) and

Saskatchewan (1.2%), whose economies were adversely affected by declining international grain and potash prices and severe drought conditions.

Employment

During the 1980s the pace of employment growth slowed by more than a third compared to the previous decade, when the rate was 2.9% annually (Table 1). But employment ended up almost keeping step with labour force growth, despite the severe recession early in the decade. The balance sheet for the previous decade showed employment lagging behind labour force growth by a wider margin.

Over the last ten years, more than twice as many women as men were added to the employment rolls, in comparison to about 25% more during the previous decade. Part-time employment gained in importance, from 13% of total employment in 1979 to 15% in 1989, accounting for over a quarter of all employment growth. For women, full-time employment rose by over a million; for men, by under 400,000.

Over 70% of total employment is now concentrated in the 25-54 age category, up from 61% in 1969. Workers in this age group accounted for all of the full-time employment growth during the 1980s, but only half of the increase in part-time employment. Over a third occurred among persons under the age of 25.

The industrial structure of employment has changed dramatically over the past twenty years.⁴ In the early '70s, 37% of employment was in goods-producing industries;⁵ by 1989 only 29%. Agriculture lost employment while other goods-producing industries, with the exception of construction, trailed overall growth over the period. Employment in manufacturing grew by only 3% during the 1980s. Its share of employment is now down to 17% from 22% in 1970. Part of this decline is due to a shift of

employment to the service sector, some of which is a result of manufacturing firms resorting to outside contractors for non-manufacturing work that used to be performed in-house. One indication of this is the 74% rise over the decade of employment in firms providing services to business management. Construction employment grew by 38% during the '70s, substantially above average, but fell slightly below average during the '80s. Between 1970 and 1979, the service-producing industries accounted for 79% of total employment growth, but for 94% between 1979 and 1989. In the service sector, only transportation, communication and other utilities industries have experienced below average growth over the past twenty years. In contrast, employment in community, business and personal service industries has doubled since 1970.

There has been some movement in the industrial distribution of employment of men and women since 1979. Over 39% of men now work in goods industries, down from 43% in 1979, while the proportion of women employed in service industries has gone up by about two percentage points to over 84%.

In line with the more rapid expansion of the service sector, white-collar occupations⁶ were up 30% over the decade, blue-collar jobs only 3%. The most significant developments were in the managerial, administrative and professional group, where employment for women rose by 769,000 and for men by 490,000.⁷ Over a quarter of men's employment and about a third of women's is now in this category, up sharply from 1979. Except for a marginal increase in service occupations, the share of all other occupation groups has dropped.

Unemployment

The unemployment rate was 7.5% in 1989, compared with 7.8% in 1988. The rate

averaged 9.3% during the 1980s and 6.8% during the 1970s. The decade saw the highest annual rate recorded since the Great Depression: 11.8% in 1983, the result of the worst recession since the war. By 1989 the rate had fallen back to the level prevailing from 1980 to 1981.

The number of unemployed peaked at over 900,000 in 1978 and again at 1.4 million in 1983. It remained above the million mark in 1989. The average duration of unemployment went up sharply and remains substantially above its pre-recession level (Table 3). Unemployed men at the end of the decade could expect to be job hunting almost four more weeks than they would have been in 1979, women two more weeks. Men 45 and over experienced the largest increase in the number of weeks unemployed, from 20 weeks in 1979 to 28 weeks in 1989.

Table 3
Average duration of unemployment
(weeks)

	1979	Peak*	1989
Both sexes	14.8	21.8	17.9
Men	15.1	23.2	19.0
Women	14.5	19.9	16.6

Source: *Labour Force Survey*

* The peak was reached in 1983. For men, however, the average declined in 1984 but rose again to 23.2 in 1985.

One consequence of the decline in the youth labour force has been a significant reduction in the number of unemployed 15-24 year-olds. During the latter part of the '70s, this group made up almost half of the unemployed; in 1989 they were only 30% of the total. They have been replaced by the 25-44 year-olds who have gone from 37% to 52% of the total. Half the unemployed in this age group are women. Even though the youth unemployment rate is down, it is still about four percentage points above the average.

Workers with no schooling beyond some post-secondary (without certificate or diploma) experienced very high rates of unemployment as a result of the recession, at least double the rates of workers with a university degree and a third more than workers with a post-secondary certificate or diploma (Table 4). By 1989 the unemployment rates of all categories had improved. But only the rate for persons with a post-secondary certificate or diploma came close to its 1979 level. The rates for all other categories were at least half a percentage point higher. The unemployment situation of persons with grade eight or less has considerably worsened since 1979. Irrespective of the decline in the number unemployed in this category, the differential between their unemployment rate and the overall rate has widened from 1.4 percentage points in 1979 to 3.6 points in 1989. The number of unemployed in all other categories has increased since 1979, in some cases dramatically. For example, the number of unemployed with a university degree has almost doubled. But in terms of the differential between their unemployment rate and the overall rate, their situation is either virtually unchanged from that in 1979, as in the case of persons with a post-secondary certificate or diploma, or has only moderately deteriorated.

Table 4
Unemployment rates by level of
schooling

	1979	Peak*	1989
	%		
Total	7.4	11.8	7.5
0-8 years	8.8	13.4	11.1
9-13 years	8.4	13.8	8.9
Some post-secondary	6.6	11.7	7.3
Post-secondary certificate or diploma	5.1	8.9	5.2
University degree	3.2	5.3	3.7

Source: *Labour Force Survey*

* The peak was reached in 1983 or 1984, depending on the category.

The unemployment rate of blue-collar workers was 9.1% in 1989, up by over half a percentage point from 1979, while the rate for white-collar occupations went up marginally to 6.1%. The number of unemployed in the managerial and administrative category almost tripled to 61,000. But the unemployment rate for this group remained very low at 3.8%. The highest rates at the end of the decade were recorded in blue-collar occupations: 23.5% for forestry occupations, up from 20% in 1979; 14.5% for fishing and 12.4% for construction occupations, up marginally in both cases. The occupations with the lowest unemployment rate were in the medicine and health group: only 2.5% were seeking employment in 1989.

The unemployment insurance program was put under considerable strain by the 1981-82 recession. The number of beneficiaries who reported no earnings went from an average of 572,000 in 1979 to 1,030,000 in 1983. Data for the first three quarters of 1989 indicate that final results for the year will remain at or above the 1988 level of 780,000 beneficiaries, or one-third higher than in 1979.

One measure of the severity of unemployment is the number of persons who do not look for work because they believe no work is available, the "discouraged workers". Their numbers went up significantly because of the recession.⁸ From an estimated 83,000 in 1979 their number rose to 197,000 in 1983. But by 1989, this figure had dropped to 70,000, an indication of the extent to which labour market conditions had improved in the latter half of the '80s.

What's ahead for the '90s

Trends evident since the '70s, such as the aging of the labour force, women as the major source of labour force growth, a progressively better educated and, therefore, more adaptable labour force and the continuing decline of the goods-producing sector, may become more pronounced. These trends will continue to influence the issues for public discussion. High on the agenda will likely be the provision of day-care facilities; the extension of pay-equity measures; the retraining and reintegration into the labour force of older workers and retirees, as the youth generation declines; the need for workers to continually update and upgrade their skills to adapt to rapidly changing work requirements; and the nature and level of support to workers in industries subjected to the stresses of international competition.

Issues of wider social concern may also have a significant impact on the labour force in the '90s. One of the most important is the public's growing perception of the detrimental effect of industrial pollution on the health of the environment. Pollution control measures adopted by both business and government could well affect the rates of employment growth in certain industries, occupations or regions.

Finally, given continuing low levels of natural increase in the population, the role of immigration as a source of labour market growth in the coming decade can be expected to receive increased attention. □

Notes

¹ Average number (in units) of actual hours worked per week at all jobs, calculated excluding persons who were not at work during the reference week.

² Calculated from data available in the following publications of the Organisation for Economic Co-operation and Development: *Labour Force Statistics 1966-86*, Paris, 1988, pp. 28-29, *OECD Economic Outlook*, Paris, June 1989, p. 123 and *Quarterly Labour Force Statistics*, Number 3, Paris, 1989. The comparisons are limited to the period 1969 to 1988.

³ See, for example, Claude Picher, "L'envers de la médaille", *La Presse*, October 14, 1989, page H1.

⁴ In January 1984, the 1980 Standard Industrial Classification replaced the 1970 Standard Industrial Classification as the basis for coding the LFS industry question. As a result, estimates of the labour force by industry were revised. For example, the estimate for the construction industry went up by 2.4% while that for transportation, communication and other utilities went down by 1.9%. Therefore, trends in employment by industry observed over the decade are in part due to this classification change. For further information on the impact of the change, see the article by Joanne Moloney in *The Labour Force*, November 1986.

⁵ Goods-producing industries include agriculture, other primary industries, manufacturing and construction. Service-producing industries include transportation, communication and other utilities;

trade; finance, insurance and real estate; community, business and personal services; and public administration.

⁶ White-collar occupations include managerial and other professional, clerical, sales and service occupations. Blue-collar occupations include primary occupations; processing, machining and fabricating occupations; construction trades; transport equipment operating; and material handling and other crafts.

⁷ Some of this increase is attributable to a change of occupational classifications halfway through the decade. In January 1984, the 1980 Standard Occupational Classification replaced the 1971 Occupational Classification Manual as the basis for coding the LFS occupation question. The change did have a noticeable impact on some of the major groups. For example, the estimate for the managerial, administrative and professional group went up by 6.3% while that for sales occupations went down by 9%. For further information on the impact of the changeover, see the article by Cécile Dumas in *The Labour Force*, October 1986.

⁸ The figures on "discouraged workers" are from the Survey of Job Opportunities, an annual supplement to the Labour Force Survey which has been conducted in March of every year. For further information on this survey and its results, see the article by Ernest B. Akyeampong, in *Perspectives on Labour and Income*, Autumn 1989.

References

Akyeampong, E.B. "Discouraged Workers", *Perspectives on Labour and Income* (75-001E). Statistics Canada, Ottawa, Autumn 1989.

Dumas, C. "Occupational Trends Among Women in Canada: 1976 to 1985", *The Labour Force* (71-001). Statistics Canada, Ottawa, October 1986, pp. 85-127.

Moloney, J. "Recent Industry Trends in Employment: Canada and the Provinces", *The Labour Force* (71-001). Statistics Canada, Ottawa, November 1986, pp. 85-155.

Organisation for Economic Co-operation and Development. *OECD Economic Outlook*. Paris, June 1989.

Organisation for Economic Co-operation and Development. *Labour Force Statistics, 1966-1986*. Paris, 1988.

Organisation for Economic Co-operation and Development. *Quarterly Labour Force Statistics* (No. 3). Paris, 1989.

Picher, C. "L'envers de la médaille", *La Presse*. Montréal, October 14, 1989, p. H1.

Statistics Canada. *Historical Labour Force Statistics-Actual Data, Seasonal Factors, Seasonally Adjusted Data* (71-201). Ottawa.

Statistics Canada. *Labour Force Annual Averages* (71-529). Ottawa.

High technology at work

Fred Wong

During the last decade, most industrialized countries have acknowledged that high-technology industries are important for their social and economic well-being (OECD, 1988). Both the public and the private sectors have commissioned many studies to find ways of developing new high-tech industries and accelerating the growth of existing ones (Brainard, 1988). However, no standard definition of high-tech industries exists: it varies from study to study depending on the objectives (Markusen et al., 1986). Moreover, little empirical research has been published on defining the Canadian high-tech industry except for the work of the Economic Council of Canada.

It is thus not surprising that there is no consensus on the definition of "high-tech industries". This article reviews some of the current concepts and definitions. It also examines recent employment and earnings trends in Canadian high-tech industries. A modified Economic Council of Canada definition of high-tech industry is used in this study.

Definitions of high-technology industry

The term "high technology" or "high-tech" is commonly used, but what exactly does it

mean? What are its unique features and characteristics? To some people, high-tech means industries that devote much of their resources to research and development. To others, it may refer to industries that manufacture innovative and technologically advanced products (for example, new pharmaceutical products, aerospace or electronic equipment). Sometimes high-tech implies state-of-the-art processing techniques using robotic, computer-aided manufacturing or laser technology. Or, it may simply refer to industries that make fashionable consumer goods and services such as "high-tech" tennis racquets and athletic shoes, health care and cosmetic products.

The lack of a standard definition may lie in the very nature of high-tech industries. Many characteristics of high-tech industries are qualitative. It is difficult to devise scales or measurement systems to capture, for example, accelerated obsolescence, high risk or strategic importance to government. High-tech characteristics may also change quickly, influenced by market forces, public policy and technology itself (for example, a breakthrough in research and development). These changes can alter the technological structure of an industry, and the high-tech industry group as a whole.

Despite the lack of agreement, certain criteria have often been employed to identify high-tech industries (OECD, 1985). These are product sophistication, expenditures on research and development (R & D), and the

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proportion of scientific and technological workers in the industry.

Product sophistication

Industries are often designated as high-tech if their final product is perceived by the user to be high-tech. The advantage of this approach is simplicity (Ministry of State for Science and Technology, 1987). The disadvantage is that judgements of technological sophistication are based on a range of qualitative and quantitative factors, and invariably lead to subjective and arbitrary classification (Conklin, 1988). Classifying firms or industries that make both high-tech and low-tech goods is also a problem.

Currently, no standard list of high-tech products has been established. Several lists are in use, including three by the Organisation for Economic Co-operation and Development (OECD, 1985), and four developed in the United States (U.S. Department of Commerce, 1985). But none of these lists include high-tech services. Although all the lists are derived from slightly different methodologies, they generally use research and development activity as the most important factor identifying high-tech products. Statistics Canada has published trade statistics for high-tech products based on one of the OECD lists (Statistics Canada, 1987).

R & D expenditures

The research and development activity of an industry is frequently used as an indicator of the level of technology. Industries are ranked according to their ratio of R & D expenditures to net sales of final outputs. The ranking represents the relative effort each industry puts into acquiring new knowledge to introduce or improve products or processing techniques.

But the R & D indicator has limitations. R & D expenditure ratios tend to be higher for firms producing mainly new products or using new processes than for

those making well-established products. For example, the ratios are smaller for petroleum and pulp and paper firms than for computer and bio-technology firms. R & D ratios for multinational enterprises can also appear small in one country if much of their R & D activity is carried out in another country. In fact, R & D ratios could misrepresent the actual technological level of industries in a small, open economy where foreign investment and ownership of industries are significant, of which Canada is a good example (Palda, 1986; ECC, 1983; Caves et al., 1980).

Since the R & D ratio captures only the relative effort of industries in acquiring new technological knowledge, it says nothing about the current technological level of an industry. Moreover, the commercial application and the exact location of the industry using the new technology are not always certain. They depend ultimately on many factors, such as the size of the potential market, tariff and non-tariff barriers, costs of capital, labour and land, and environmental impacts. In addition, actual commercial application may have a considerable time lag (ECC, 1983). Hence, the R & D ratio is at best an indicator of investment in future high technology, which may or may not yield positive returns in terms of jobs and products.

Proportion of technology workers

This indicator is based on the proportion of an industry's work force employed in technology occupations. Technological workers include engineers, scientists, mathematical specialists, engineering and science technicians, and computer specialists. Conceptually, this indicator reflects the characteristics of the human resource inputs in an industry. It shows the extent of the technical skill of the labour required to make the final product. This indicator's major drawback is that it excludes manufacturing sectors that produce high-tech goods using a relatively

low-skilled labour force (for example, electronic assembly plants). It also excludes industries whose state-of-the-art processing techniques require relatively few skilled workers, such as automated bottling plants and data-entry services.

U.S. Bureau of Labor Statistics definitions

The U.S. Bureau of Labor Statistics (BLS) offers three definitions of high-tech industry for labour market analysis (Riche et al., 1983). The first is based on the proportion of technological workers in the industry. An industry is high-tech if this proportion is at least 50% above the average for all industries. Under this definition, 48 out of 278 industries are included.¹ The second definition uses the ratio of R & D expenditures to net sales, and includes industries with at least twice the average ratio for all industries. Only six U.S. industries meet this definition.

The third definition is based on a combination of the first two. It includes industries with (1) a proportion of technology workers to total employment equal to or greater than the average for all manufacturing industries, and (2) a ratio of R & D expenditures to net sales equal to or above the average for all industries. A group of 28 industries falls under this definition.

In 1983, the first group of industries accounted for about 13% of total paid workers in the U.S., the second group for almost 3%, and the third group for slightly over 6% (Burgan, 1985).

Economic Council of Canada definition

The objective of the Economic Council of Canada's (ECC) high-tech industry definition is to ascertain the extent or the intensity to which Canadian industries employ advanced technology to produce their current goods and services, not the ability of the industries to create future technology or new products. To identify the

intensive high-tech users among industries, high-tech input ratios were devised (see box below). This indicator is based on the proportion of high-technology embodied in final goods and services (ECC, 1987).

To produce goods and services, industries require many inputs. A portion of these inputs often consists of high-tech goods, such as computer chips, plastic resins, graphite materials, robots, computer numerical control tools, and precision instruments. A remaining portion consists of less sophisticated inputs, such as logs and bricks. Industries are ranked in descending order of the ratio of the high-tech inputs to total inputs. The industries are then divided into three equal industry groups. The first group is classified as high-technology, the second as mid-technology, and the third as low-technology.

Deriving the high-tech input ratio

The high-tech input ratio of an industry is derived by dividing the high-tech inputs by the total inputs. Statistics Canada's input-output tables provide estimates of non-labour inputs (made up of 600 commodities) and paid labour used by industries to produce the final goods and services of the economy. The list of commodities designated as high-tech by the Economic Council of Canada is almost identical to the commodity lists used by the U.S. and the Organisation for Economic Co-operation and Development. Ideally labour skills should also be included as a factor in deriving the ratio. Unfortunately, occupational data are not available in the input-output tables.

The ratio of high-tech inputs to total inputs was derived for the business sector² of the economy at the two-digit level of the 1970 Standard Industrial Classification (SIC) for 1971-1980. The industries were then ranked in decreasing order of the high-tech input ratio value. Although the ratio values fluctuated over the years, the ranking showed little change.

Conceptually, the high-tech input ratio embodies several criteria simultaneously. It accounts for the proportion of high-tech inputs that are *imbedded* in the final goods and services as well as *used* in the production processes.³ Thus, the effects of the users of high-tech, rather than just the producers of high-tech goods and services, are captured. Furthermore, this approach enables service industries to be considered as an integral part of the high-tech industry analysis. The ratio shows, in relative terms, each industry's use of current high technology available from domestic and foreign sources. Ratio values indicate the intensity of usage. In other words, they capture the relative impact of current high technology on various industries.

Modification of the ECC "high-tech" definition

This study has adopted the ECC method of evaluating the technological level of industries. It ranks the industries in descending order, using the same high-tech input ratios used by the ECC.

Under the ECC technological classification, the first third of the ranking is designated as high-technology, the second third as mid-technology, and the last third as low-technology. Each technology group is extensive, covering a large segment of the economy. The high-technology group, for example, produces nearly fifty percent of the goods and services in Canada and employs about the same proportion of the work force.

To examine employment and earnings trends, a narrower high-tech industry group is defined by slightly modifying the ECC classification. In this study, industries (at the two-digit SIC level) are divided into four equal industry groups instead of three. Those in the top quartile of the ranking are designated high-technology, second-quartile industries are medium-high technology, third-quartile industries are

medium-low technology, and fourth-quartile industries are low-technology. With this modified classification, each group has fewer industries and the ratio values in each group are more homogeneous (Table 1).

Alternative methods for re-grouping the industries are also possible. For example, industries could be grouped relative to the average ratio value, which would also involve arbitrary threshold values for each group. Another method would be to group industries according to distinct breaks in the distribution of ratio values. However, no discernible breaks are evident.

Profile of Canadian industries

This study focuses on the business sector of the economy from 1977 to 1986, based on the 1980 industry ranking.⁴ All public goods and services and the activities of religious and other non-profit organizations were excluded, as were agriculture, fishing, hunting and trapping industries.⁵

In total, 40 industries are examined, 10 industries in each technology group. According to the high-tech input ratio, the transportation equipment manufacturing industry ranks first overall, followed by communications, the rubber and plastics industries, and the electrical and electronic products industries. In the high-technology group, four of the ten industries are in the service producing sector; the remaining six are in the goods producing sector – one in mining, and five in manufacturing.⁶ Also, data from the Survey of Manufacturing Technologies (Statistics Canada, 1989) showed that the five manufacturing industries in the high-technology group were leaders in intensive use of advanced technology and in the speed with which they embraced technologies.

The high proportion of service industries in the high-technology group reflects the technological revolution of the service

Table 1
The business sector by technology group

			Paid workers					Paid workers	
Rank	High-tech ratio				Rank	High-tech ratio			
			1977	1986				1977	1986
			'000					'000	
High-technology			1,285	1,608	Medium-low technology			904	1,175
% of total			21	22	% of total			15	16
1	56	Transport equipment manufacturing	178	214	21	13	Education and related services	18	24
2	38	Communications	192	191	22	13	Textile industries	58	56
3	37	Rubber and plastics manufacturing	55	67	23	11	Insurance carriers	73	82
4	36	Electrical and electronic products	114	118	24	11	Non-metal mines	15	12
5	32	Health services	63	113	25	10	Paper and allied industries	121	116
6	30	Finance industries	173	251	26	9	Accommodation and food services	425	667
7	27	Metal mines	60	41	27	9	Storage	17	18
8	25	Services to business management	279	433	28	8	Non-metallic mineral products	54	53
9	23	Machinery industries	89	95	29	8	Printing, publishing and allied industries	96	122
10	23	Chemicals and chemical products	82	87	30	7	Leather industries	25	23
Medium-high technology			2,954	3,580	Low-technology			935	922
% of total			49	49	% of total			15	13
11	22	Amusement and recreation services	47	90	31	6	Electric power, gas and water utilities	90	92
12	20	Trade	1,416	1,773	32	4	Furniture and fixture industries	42	55
13	19	Quarries and sand pits	7	8	33	4	Wood industries	110	114
14	19	Construction	575	561	34	4	Metal fabricating	152	148
15	18	Insurance and real estate	206	240	35	4	Primary metal industries	118	102
16	17	Miscellaneous manufacturing industries	62	69	36	3	Knitting mills and clothing industries	120	118
17	15	Personal and miscellaneous services	217	359	37	3	Tobacco products	9	7
18	15	Mineral fuel mines/wells	28	47	38	2	Food and beverage industries	222	228
19	14	Transportation	372	396	39	1	Logging and forestry services	54	44
20	14	Services incidental to mining	23	36	40	1	Petroleum and coal products	17	14

Sources: *Technology Ranking of Industries*, Economic Council of Canada; *Employment by Industry*, Input-Output Division, CANSIM. (Note that the high-tech ratio is based on 1980 data.)

industries in recent decades (Barras, 1986). For example, electronic data processing, computer-aided design, medical diagnostic equipment, and advanced computer software are now standard in the related professional offices. Electronic banking and accounting systems have transformed the method of delivering financial services. Results of a recent survey have confirmed the widespread use of these technologies among Canada's service industries (Communications Canada, 1989).

High-technology is popularly associated with manufacturing industries, yet most of the 19 manufacturing industries in this analysis rank low on the input ratio scale. Five manufacturing industries are found in the high-technology group, one is in the medium-high technology group, five more are designated as medium-low technology, while the remaining eight are ranked as low-technology. This ranking of manufacturing industries may be partly attributed to the high-tech input ratio being a relative, not an absolute, measure of high-

tech inputs. Because substantial portions of the inputs are raw materials in many manufacturing industries, the ratios tend to be low.

Output

Measured in terms of gross domestic product (GDP) – that is, the value of all goods and services – industries in the high-technology group have less economic impact than medium-high technology industries. Between 1977 and 1986, high-technology industries produced almost a quarter of the GDP, whereas medium-high technology industries contributed nearly 50% of the GDP during this period (Table 2). Medium-low technology industries accounted for about 10% of the GDP from 1977 to 1986, while low-technology industries contributed about 16%.

Over the ten-year period, the high-technology group's share of GDP gradually increased from 21% in 1977 to 25% in 1986. In contrast, the shares of the other three technology groups decreased slightly.

Table 2

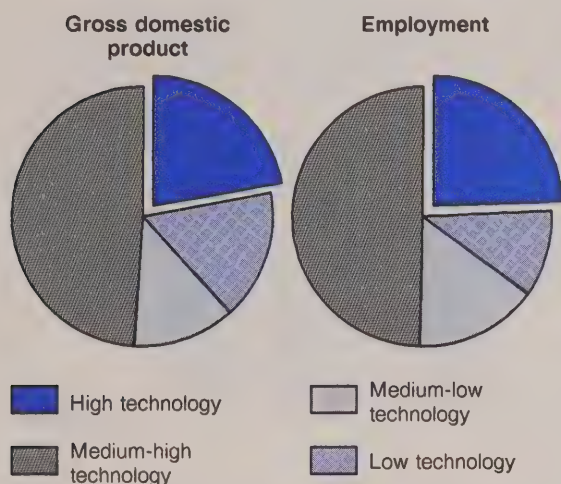
Gross domestic product: system of national accounts in 1981 constant dollars (millions)

	Total business sector	High- technology		Medium- high technology		Medium- low technology		Low- technology	
			%		%		%		%
1977	209,793	44,601	21.3	106,861	50.9	23,435	11.2	34,896	16.6
1978	212,618	46,548	21.9	104,863	49.3	25,250	11.9	35,957	16.9
1979	223,702	49,611	22.2	111,984	50.1	25,741	11.5	36,366	16.3
1980	222,130	50,189	22.6	110,206	49.6	25,614	11.5	36,121	16.3
1981	228,148	52,965	23.2	112,691	49.4	25,727	11.3	36,765	16.1
1982	214,016	50,885	23.8	107,519	50.2	22,823	10.7	32,789	15.3
1983	222,353	52,003	23.4	111,444	50.1	24,207	10.9	34,700	15.6
1984	239,265	59,268	24.8	117,153	49.0	25,208	10.5	37,636	15.7
1985	253,567	62,152	24.5	125,516	49.5	25,721	10.1	40,178	15.8
1986	261,973	64,227	24.5	129,915	49.6	27,337	10.4	40,493	15.5

Source: Input-Output Division, CANSIM

Gross domestic product and employment: distribution by technology group, 1986

High-technology's share of the gross domestic product is about the same as its share of employment.



Source: Input Output Division, CANSIM

Employment

Each technology group's share of employment is roughly comparable to its share of GDP. Between 1977 and 1986, high-technology industries employed almost a quarter of the total paid workers in the

business sector, while medium-high technology industries employed nearly half. For medium-low technology industries, the paid-worker share ranged from 15% to 16%, and for low-technology industries from 13% to 15%.

Earnings

Earnings data for the 1983-1986 period⁷ show that low-technology industries had the highest annual average earnings, followed by high-technology, medium-low and medium-high technology industries (Table 3). Paid workers in the high-tech group earned, on average, 8% less than those in the low-tech group. This is because jobs in the low-technology group were mainly in manufacturing industries, whereas many of the paid workers in the high-technology group had jobs in the service industries. The annual average wages and salaries of service jobs were generally lower than those of manufacturing jobs. Annual average earnings in medium-high and medium-low technology industries were 16% and 12%, respectively, below those of high-technology industries.

Employment growth

Over the 1977-1986 period, the high-tech group ranked second in both net employment growth (323,000) and rate of

Table 3
Annual average earnings in current dollars, 1983-1986

	All employees			
	High-technology	Medium-high technology	Medium-low technology	Low-technology
	\$			
1983	21,557	18,325	19,238	23,170
1984	22,516	18,870	19,922	24,447
1985	23,503	19,650	20,452	25,284
1986	24,146	20,206	20,828	26,033

Source: Data are derived from the Survey of Employment, Payrolls and Hours.

growth (25%). The medium-high technology group had the largest increase in the number of jobs (626,000), while the medium-low technology group had the highest growth rate (30%). In contrast, the low-technology group lost about 13,000 jobs.

As with all industry groups, most employment growth in the high-tech group occurred from 1977 to 1981, when 212,000 jobs were added, an increase of 16%. The 1981-1982 recession had a major impact on the low-technology industries, which lost 81,000 workers, a decrease of 8%. On the other hand, the high and the medium-high technology groups weathered the recession with virtually no change in employment level. In the medium-low technology group, employment growth continued, although at a much slower pace – about 2%.

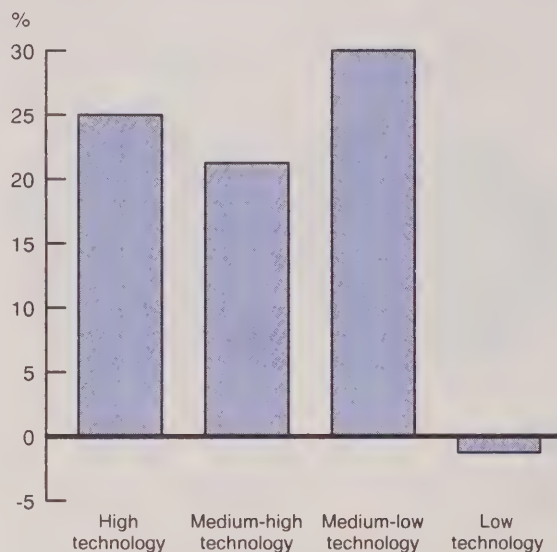
In the post-recession period (1982-1986), all groups recorded employment growth. In absolute terms, the high-tech group had the second largest increase, with 146,000 additional workers. The employment growth rate was highest in the medium-low technology group (13%). In the low-technology group, employment growth was comparatively weak, increasing by only 29,000 jobs (3.3%) between 1982 and 1986.

Dynamics of the high-technology group

As a group, high-tech industries employed 1.6 million workers in 1986, up from 1.3 million in 1977. The service industries provided more than half of these jobs during this ten-year period. Moreover, the service industries' share of jobs grew from 55% in 1977 to 61% in 1986. Substantial employment increases occurred in most high-tech service industries: 80% in health services, 55% in services to business management,⁸ and 45% in the finance industries. In communications, however, employment showed little change (-1%).

Employment growth rate by technology group, 1977-1986

The high-technology group had the second highest employment growth rate over the 1977-1986 period.



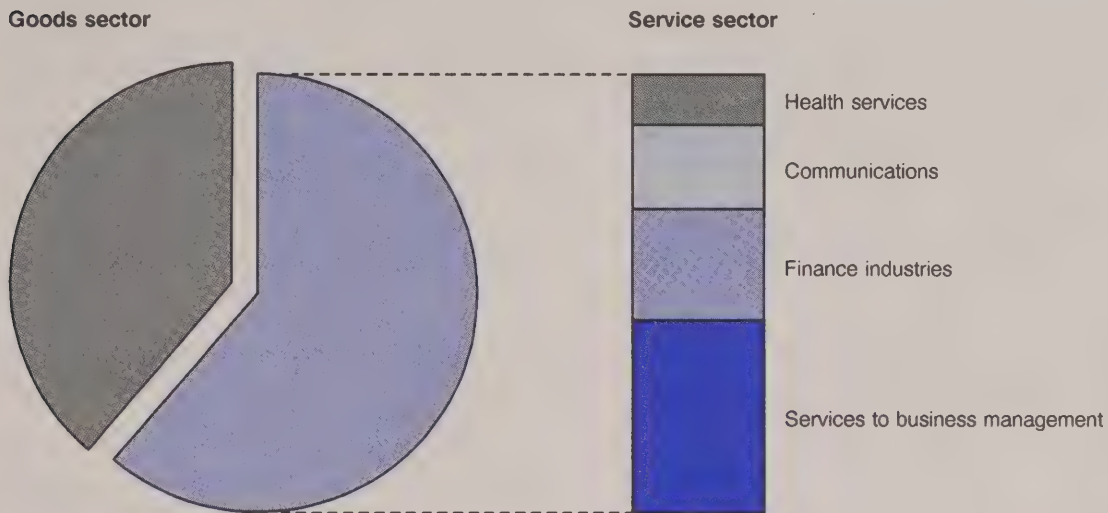
Source: Input Output Division, CANSIM

Manufacturing industries, on the other hand, employed slightly more than one-third of paid workers in the high-technology group. But manufacturing's share of all jobs in this group declined from 40% in 1977 to 36% in 1986. Compared with the service industries, the growth of high-tech manufacturing industries was moderate: 22% in rubber and plastics, 21% in transportation equipment, 6% in chemicals and chemical products and in machinery, and 3% in electrical and electronic products.

How did high-tech industries fare during the 1981-1982 recession? All high-technology manufacturing industries registered an employment decline, except for a 2% increase in the chemical products industry. The most severe decline occurred in the machinery industry, where employment dropped by 13%. The recession had less

Employment distribution in high-technology industries, 1986

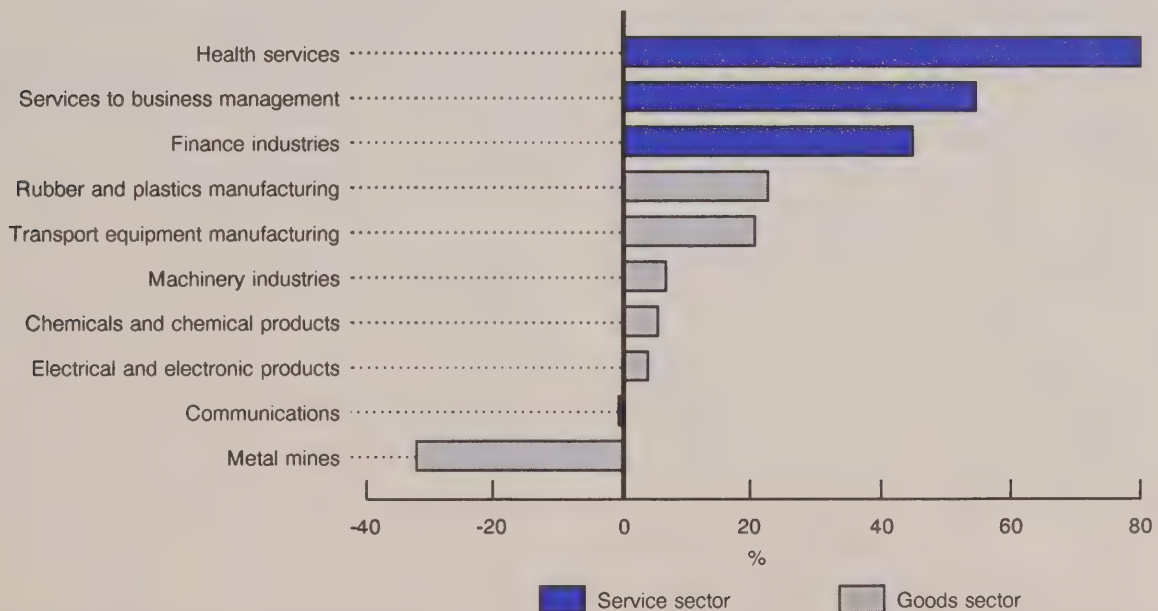
The majority of jobs in the high-tech group were in the service sector.



Source: Input Output Division, CANSIM

Employment growth rate of high-technology industries, 1977-1986

In the high-technology group, service industries generally had a higher employment growth rate.



Source: Input Output Division, CANSIM

impact on the high-technology service industries – in fact, here employment continued to grow, although at a reduced rate.

Jobs in metal mining – the only mining industry in the high-technology group – declined by 5% during the 1981-82 recession. But this seems to be part of a longer-term decline: employment in metal mining dropped from 60,000 in 1977 to 41,000 in 1986, a decline of 32%.

Despite its employment decline, the metal mining industry had the highest post-recession average annual wages and salaries of the high-technology group. Next were transportation equipment manufacturing and the chemical product industries. The lowest average wages and salaries were paid to workers in the health services industry. Service industry workers earned less, on average, than workers in high-technology manufacturing industries.

Summary

High-technology industries can be identified by several qualitative and quantitative characteristics, yet most classification systems are based on a single characteristic. For some applications, this may be misleading. The high-technology input ratio

adopted for this study accounts for several characteristics simultaneously, reflecting the relative impact of domestic and foreign high technology currently available to industry. In addition, this ratio considers service industries in the analysis of high-technology.

From 1977 to 1986, the high-technology group produced approximately one-quarter of all goods and services in the business sector of the economy. It employed a similar proportion of total paid workers, and registered the second-highest employment growth rate over this ten-year period. From 1983 to 1986, paid workers in the high-technology group had the second highest average annual earnings.

The high-technology group was not hit as hard by the 1981-1982 recession as other groups. In 1986, about half of all paid workers in the high-tech group were employed in service industries, which weathered the recession better than manufacturing industries. Overall, during the 1977-1986 period, employment growth was much higher in high-technology service industries than in high-technology manufacturing industries. However, average annual earnings in service industries were generally lower than in manufacturing industries. □

Notes

¹ The U.S. *Standard Industrial Classification Manual* (1977) groups industries into 278 categories at the 3-digit level.

² The business sector includes all transactors who operate for gain, including corporations, unincorporated business enterprises, independent professional practitioners and government business enterprises (Statistics Canada, *National Income and Expenditure Accounts*, p.102). For more details, see Statistics Canada, *The Input-Output Structure of the Canadian Economy*.

³ A weak argument can also be made that the high-tech input ratio implicitly takes into account R & D because some of the high-tech inputs will be used for R & D activities.

⁴ Employment data from the input-output tables are currently available up to 1986.

⁵ The Survey of Employment, Payrolls and Hours, the data source used to analyze earnings, does not provide earnings data for agricultural, fishing, hunting and trapping industries.

⁶ In the high-technology group, the service-producing sector consists of communications; health services; finance industries; and services to business management. The goods-producing sector consists of transportation equipment manufacturers; rubber and plastics makers; electrical and electronic products; metal mines; machinery industries; chemicals and chemical products. Manufacturing industries comprise all the goods-producing industries except metal mines.

⁷ Because the Survey of Employment, Payrolls and Hours dates from 1983 (when it replaced an earlier survey), earnings data are available only for the 1983-1986 period.

⁸ Services to business management consist of the following: employment agencies and personnel suppliers; computer services; security and investigation services; advertising services; offices of architects; engineering and scientific services; offices of lawyers and notaries; offices of management and business consultants; and miscellaneous services to business management.

References

Barras, R. "A Comparison of Embodied Technical Change in Services and Manufacturing Industry", *Applied Economics* (Vol. 18, No. 2). Chapman and Hall Ltd., London, G.B., 1986, pp. 941-958.

Brainard, R. *Science and Technology Policy Outlook, 1988*. Organisation for Economic Co-operation and Development, Paris, 1988.

Burgan, J.U. "Cyclical Behavior of High Tech Industries", *Monthly Labor Review* (Vol. 108). Bureau of Labor Statistics of the U.S. Department of Labor, Washington, D.C., May 1985, pp. 9-15.

Conklin, D.W. and F. St-Hilaire. *Canadian High-Tech in a New World Economy: A Case Study of Information Technology*. The Institute for Research on Public Policy, Halifax, N.S., 1988.

Caves, R.E., M.E. Porter, A.M. Spence and J.T. Scott. *Competition in the Open Economy, A Model Applied to Canada*. Harvard University Press, Cambridge, Massachusetts, 1980.

Communications Canada ...[et al.]. *Diffusion of Technology Survey in the Service Industries*. Ottawa, September 1989.

Economic Council of Canada. *The Bottom Line: Technology, Trade, and Income Growth* (EC22-113/1983E). Minister of Supply and Services Canada, Ottawa, 1983.

Economic Council of Canada. *Making Technology Work: Innovation and Jobs in Canada* (EC22-142/1987E). Minister of Supply and Services Canada, Ottawa, 1987.

Hatter, V.L. *U.S. High-Technology Trade and Competitiveness*. U.S. Department of Commerce, Washington, D.C., February 1985.

Markusen, A.R., P. Hall and A. Glasmeier. *High Tech America: the What, How, Where and Why of the Sunrise Industries*. Allen and Unwin, Boston, 1986.

Ministry of State for Science and Technology. *Canadian Trade in High-Technology: An Analysis of Issues and Prospects*. Discussion Paper. Ottawa, March 1987.

Organisation for Economic Co-operation and Development. *Trade in High Technology Products: An Initial Contribution to the Statistical Analysis of Trade of Patterns in High Technology Products* (DSTI/SPR/84.66). Paris, January 1985 (First revision).

Organisation for Economic Co-operation and Development. *New Technologies in the 1990s: A Socio-economic Strategy*. Paris, 1988.

Office of Management and Budget. *1977 supplement, Standard Industrial Classification Manual, 1972*. U.S. Department of Commerce, Office of Federal Statistical Policy and Standards, Washington, D.C., 1978.

References – Concluded

Palda, K.S. . *Technological Intensity: Concepts and Measurement*. Office of Industrial Innovation, Ottawa, 1985.

Riche, R.W., D.E. Hecker and J.U. Burgan. "High Technology Today and Tomorrow: A Small Slice of the Employment Pie", *Monthly Labor Review* (Vol. 106). Bureau of Labor Statistics of the U.S. Department of Labor, Washington, D.C., November 1983, pp. 50-58.

Statistics Canada. "Statistical Tables: Survey of Manufacturing Technologies – 1989", *Indicators of Science and Technology* (88-002, Vol. 1, No. 4). Minister of Supply and Services Canada, Ottawa, September 1989.

Statistics Canada. *Employment, Payrolls and Hours* (72-002). Minister of Supply and Services Canada, Ottawa.

Statistics Canada. "Changes in the Presentation of Some Science and Technology Statistics: 2", *Science Statistics* (88-001, Vol. 11). Minister of Supply and Services Canada, Ottawa, March 1987.

Statistics Canada. *National Income and Expenditure Accounts* (13-549E, Vol. 3). Minister of Industry, Trade and Commerce, Ottawa, 1975.

Statistics Canada. *The Input-Output Structure of the Canadian Economy* (15-201). Minister of Supply and Services Canada, Ottawa.

The distribution of wealth in Canada and the United States

Raj K. Chawla

Few countries are as closely linked as Canada and the United States, not only geographically but also economically and culturally. But how do we compare in terms of wealth holdings? Do we choose different asset portfolios? How is wealth concentrated in the two countries? This article tries to answer these questions by comparing the wealth of U.S. and Canadian family units by various characteristics.¹

Mean wealth of Canadian and American households

In 1984 there were 9 million family units (hereafter referred to as households, see *Technical Notes*) in Canada compared with 87 million in the U.S. – close to a one-to-ten ratio. The households in the two countries were quite similar: the median age of the head was 43 years in Canada, 46 years in the U.S.; the average family sizes were 3.3 and 3.2 persons, respectively; and unattached individuals constituted 29% of all households in Canada, 27% in the U.S.

In terms of U.S. dollars,² total household wealth amounted to \$614 billion in Canada compared with \$6,834 billion in the U.S. – a one-to-eleven ratio. In terms of

averages, an American household held wealth of \$78,700 compared with \$66,400 for a Canadian household. On the other hand, the median wealth of U.S. households was \$32,700 compared with \$31,800 for Canadians, a gap of only \$900 (Table 1).

Why such a disparity in the difference between mean and median wealth holdings? First, estimates of mean holdings are very much affected by the presence of extremely low or high amounts. Second, the distribution of wealth is skewed because large amounts of wealth are held by a relatively small number of households. One way to measure this skewness is by the ratio of the median wealth to the mean wealth. The closer this ratio is to one, the more symmetric the wealth distribution. Although the distribution of wealth is skewed in both countries, the degree of skewness varies (Table 2). The median-to-mean ratio in the U.S. was 0.42 compared with 0.48 for Canada.

The proportion of households with wealth between \$50,000 and \$99,999 was almost identical in the U.S. and Canada. However, the proportion of Americans with wealth of \$100,000 or more was 21% compared with 18% for Canadians. At the other extreme, 11% of all American households had negative or zero wealth (that is, their liabilities exceeded or equalled their asset holdings) compared with 9% of Canadian households. These are likely young families who have higher mortgages on owner-

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Technical notes

Concept of wealth

Wealth, as defined by the two surveys, is the value of total assets less total debt. Assets include the ownership of bonds, stocks and shares; deposits in financial institutions; owner-occupied homes, other real estate, cars and certain other recreational vehicles; amounts in registered savings plans; and farms and professional practices. Debts refer to money owed on different charge accounts, loans from banks and other financial institutions, and mortgage indebtedness on an owned home or other real estate. The concept of wealth used excludes cash surrender value of life insurance policies, accrued claims against employer-sponsored or work-related pension plans and other social security programs. Also excluded is the value of all consumer durables (except automobiles and some recreational vehicles), household furnishings and equipment, art and coin collections and jewellery.

Unit of analysis and sources of data

The Canadian data are based on family units (a term used to designate, collectively, unattached individuals and families with two or more persons related by blood, marriage, or adoption). The U.S. data, on the other hand, are in terms of households (a term used to define a group of persons, related or unrelated, occupying a housing unit). A small proportion of households consist of more than one family unit (for example, in Canada in May 1984, 5% of all households contained more than one family unit) but this should not significantly distort the overall comparisons of wealth holdings. The composition of a family unit or a household is as of the time of the survey.

Canadian data on incomes and wealth of households were compiled from the asset/debt supplement to the Survey of Consumer Finances (SCF) conducted in the spring of 1984. For details about this survey, see *Income Distributions by Size in Canada*, 1983.

Data on assets and debts of American family units were compiled from the U.S. Survey of Income and Program Participation

(SIPP) conducted between September and December 1984. For details about this survey, see *Household Wealth and Asset Ownership: 1984*. Both the Canadian SCF and the U.S. SIPP samples were drawn on the basis of area sample frames. Both surveys were conceptually comparable and had large enough sample sizes to yield statistically reliable estimates. However, estimates of wealth derived from these surveys will be subject to sampling and non-sampling errors.

Differences in selected income tax provisions

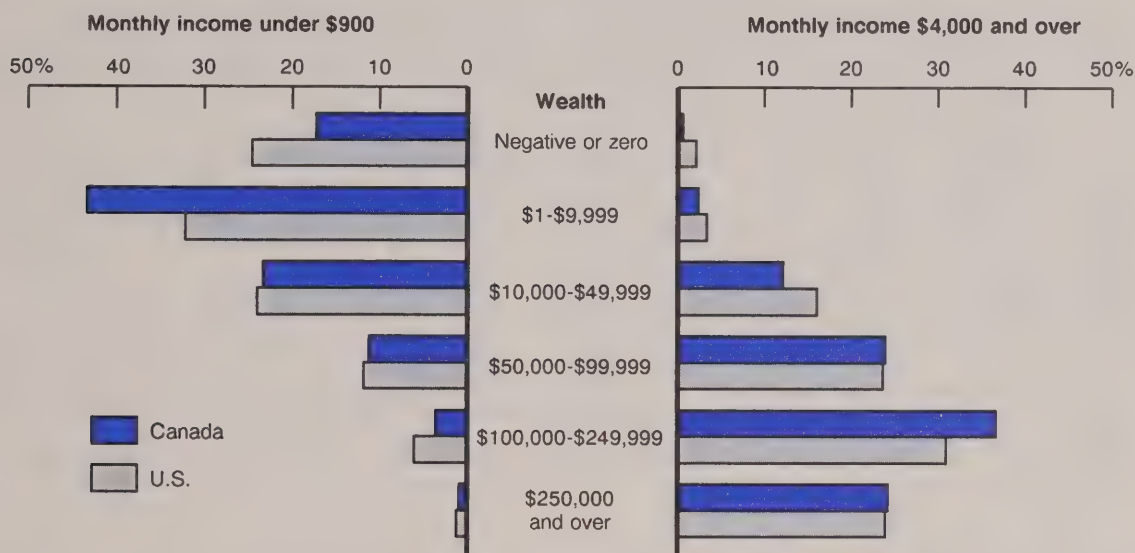
Income tax provisions not only provide governments with a tool to redistribute incomes but also provide tax filers with an incentive to save for the future by deferring taxes or by claiming certain exemptions. The two income tax systems are quite comparable, with some exceptions. For example, under U.S. income tax provisions, Americans have been allowed to deduct interest expenses incurred on the mortgage on an owner-occupied home as well as on other consumer loans taken out for such purchases as cars or household furnishings (although interest on these loans will no longer be tax deductible in 1991). Canadians, on the other hand, have no such tax provisions on interest expenses on the two key assets which make up most of the wealth of young households.

There is no net wealth tax in Canada or the U.S. One-half of all capital gains are taxed in Canada compared with four-tenths in the U.S. Canadians do not pay any tax on gains from the sale of a principal private residence whereas Americans pay tax on the amount in excess of the purchase price of a new residence.

In short, certain tax provisions available in one country and not the other may influence the gap in incomes and wealth holdings of households. However, no suitable data are available to demonstrate a quantitative link between differences in wealth holdings and income tax provisions. For details of income tax provisions available to Canadians and Americans, see their respective *Master Tax Guide*, CCH Inc.

Proportion of households by wealth holdings in two income groups, 1984

Among high income households, the proportion with wealth exceeding \$100,000 is higher in Canada (61%) than in the U.S. (55%).



Source: Canada: Survey of Consumer Finances
U.S.: Survey of Income and Program Participation

occupied homes and other consumer debt incurred on household furnishings and equipment. The younger American households may owe larger amounts of debt (mortgage as well as consumer debt), as interest paid on such debts prior to 1986 was deductible from their income tax – a tax provision not available to Canadians. (Under the U.S. tax reforms introduced in 1986, the interest on consumer debt will no longer be tax deductible beginning in 1991.)

Factors affecting wealth

The wealth holdings of a household are determined primarily by income level, life-cycle stage (measured in terms of the age of the head of a household) and home-ownership status. Other factors include the propensity to save, knowledge of investment markets, risk-taking in the choice of asset

portfolios, inheritances and bequests, and economic conditions prevailing in the country.

As the size of monthly income increases from under \$900 to \$4,000 or over, the proportion of households holding wealth of \$250,000 and over also increases, from 1% to 24%. Households with monthly incomes of \$4,000 and over owned 38% of the total wealth in the U.S. compared with 24% in Canada.

The percentage distributions of households by amount of wealth were more similar at the top end of the income scale (that is, a monthly income of \$4,000 and over) than they were at the bottom end (a monthly income of under \$900). The lack of similarity between percentage distributions at the bottom end of the income scale was due to the difference in the age mix and composition of households. The bottom

Table 1

Percentage distribution of households by wealth and monthly income, Canada and U.S., 1984*

Wealth	Monthly income†								Total	
	Under \$900		\$900-\$1,999		\$2,000-\$3,999		\$4,000 and over			
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
	%									
Negative or zero	17.4	24.5	8.3	9.7	3.1	4.6	0.6	2.2	8.7	11.0
\$1 - \$4,999	38.4	25.3	18.0	18.9	5.3	8.8	1.1	1.8	18.6	15.3
\$5,000 - \$9,999	5.0	6.9	9.6	8.1	4.5	6.2	1.4	1.5	6.2	6.4
\$10,000 - \$24,999	9.7	11.5	14.8	13.5	14.4	14.6	2.7	5.9	12.5	12.4
\$25,000 - \$49,999	13.6	12.5	17.3	14.5	21.1	17.7	9.4	10.3	16.9	14.5
\$50,000 - \$99,999	11.2	11.8	18.4	19.1	27.2	23.9	23.8	23.5	19.5	19.3
\$100,000 - \$249,999	3.7	6.2	11.0	13.6	19.1	18.3	36.8	31.0	13.2	15.3
\$250,000 - \$499,999	0.8	1.0	2.0	2.1	3.9	4.6	15.2	13.4	3.1	4.0
\$500,000 and over	0.2	0.3	0.6	0.5	1.4	1.3	9.1	10.4	1.3	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Canada: Survey of Consumer Finances, 1984; U.S.: Survey of Income and Program Participation, 1984.

* All financial data in U.S. dollars.

† For Canada, monthly income groups are derived from the annual data supplied by respondents, i.e. dividing the total annual family income by 12.

Table 2

Wealth of households by selected characteristics, Canada and U.S., 1984*

Characteristics	Canada				U.S.			
	Distribution of family units	Distribution of aggregate wealth	Mean wealth	Median wealth	Distribution of family units	Distribution of aggregate wealth	Mean wealth	Median wealth
	%	%	\$	\$	%	%	\$	\$
Total	100	100	66,400	31,800	100	100	78,700	32,700
Monthly income groups†								
Under \$900	28	11	25,100	3,600	26	10	29,700	5,100
\$900 - \$1,999	34	26	51,200	25,100	31	20	52,700	24,600
\$2,000 - \$3,999	31	39	83,400	52,900	31	32	80,100	46,700
\$4,000 and over	7	24	236,600	127,300	12	38	242,100	123,500
Age of head								
Under 35 years	31	14	28,900	8,400	30	8	22,700	5,800
35-44 years	20	20	67,900	37,500	20	18	69,500	35,600
45-54 years	16	23	98,600	58,900	14	21	115,300	56,800
55-64 years	15	24	104,100	62,700	15	25	130,500	73,700
65 years and over	18	19	70,800	42,100	21	28	104,900	60,300
Tenure								
Homeowners	58	91	103,200	65,000	64	93	114,200	63,300
Others	42	9	14,700	3,500	36	7	14,800	1,900

Sources: Canada: Survey of Consumer Finances, 1984; U.S.: Survey of Income and Program Participation, 1984.

* All financial data in U.S. dollars.

† For both Canada and the U.S., total income consists of wages and salaries, net income from self-employment, investment income, transfer payments from government, pension income and other miscellaneous income. All income in kind and capital gains or losses, etc. are excluded.

income group consists in large measure of the very young starting out in their lives and the very old living mostly on government transfer payments. The younger group of households would have small amounts of wealth, whereas the older group may have wealth holdings of varying sizes (depending on how they accumulated wealth over their life cycle). This demographic mix is also the reason why the distributions of wealth among households with monthly incomes under \$900 show such large relative differences between mean and median wealth (Table 2).

In both countries, the maximum wealth holdings were for households where the head was in the 55-64 age group. With the exception of Canadian households with heads under 35 years (who had 27% more wealth than their American counterparts), American households in all other age groups were wealthier. For instance, compared to the mean wealth of their Canadian counterparts, American households with heads in the 35-44 group had only 2% more wealth whereas those with heads 65 and over had 48% more wealth.

In 1984, 28% of the total household wealth in the U.S. was owned by the elderly compared with 19% in Canada. Relatively speaking, therefore, a greater share of overall wealth was held by the American elderly than by their Canadian counterparts.

Homeownership is another key indicator of wealth holdings, as homeowners in both countries held more than 90% of the total household wealth. The major component of wealth for most of them was the equity in their home. Half of all Canadian homeowners had wealth of \$65,000 or more, while in the U.S. the median was \$63,300. In both countries, the mean wealth of homeowners was over \$100,000 compared with a mean wealth of around \$15,000 for non-homeowners.

Rates of ownership of different assets

In Canada, 58% of all households owned a home compared with 64% of all Americans (Table 3). Besides any difference in the demographic mix of populations and the question of affordability of a home in the two countries, one factor may explain at least some of this difference in the rate of homeownership. Under U.S. income tax provisions, homeowners can claim tax deductions for mortgage interest paid on their occupied homes. This provision may encourage young households to purchase their own home, and higher income households to purchase more expensive homes.

Relative to Canadians, more Americans invested in stocks, shares, mutual funds, rental property and other real estate. This may again be attributed to some extent to U.S. income tax provisions in respect to the availability of Employee Stock Ownership Plans (ESOPs), the treatment of dividend income on stocks and shares,³ capital gains/losses and depreciation rules governing rental and commercial properties. In contrast, the proportions of Canadians owning savings bonds such as Canada Savings Bonds or savings in Registered Retirement Savings Plans were much higher than the corresponding proportions found for American households.

In other words, the asset portfolios selected by the majority of Canadians involved little investment risk and offered guaranteed access to accumulated funds, whereas the portfolios selected by Americans carried higher risk and a likelihood of capital gains or losses (Tables 3 and 4). Canadians are reputedly more conservative investors, looking more for safety and fixed returns on their savings, and the data seem to bear this out. Americans invest more in risky assets and so may end up making more capital gains – or incurring losses.

Table 3
Proportion of households owning selected assets, Canada and U.S., 1984

Characteristics	Equity in													
	Stock holdings		Savings bonds		Registered savings		Owner-occupied home		Other real estate*		Motor vehicles		Business	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
	%													
Total	13	20	28	15	28	20	58	64	13	20	76	86	14	13
Wealth groups														
Negative or zero	3	3	6	6	3	3	4	8	1	1	41	46	3	4
\$1 - \$4,999	3	4	11	7	5	3	3	12	1	2	51	84	2	4
\$5,000 - \$9,999	8	10	25	12	15	10	24	39	6	5	79	90	6	8
\$10,000 - \$24,999	9	12	24	13	22	11	60	68	9	10	82	91	7	9
\$25,000 - \$49,999	10	17	28	16	26	15	83	87	14	14	84	90	10	11
\$50,000 - \$99,999	18	25	40	20	42	26	92	93	18	23	89	93	15	14
\$100,000 - \$249,999	30	42	50	24	59	43	95	95	30	45	92	94	34	22
\$250,000 - \$499,999	37	55	47	19	59	49	94	94	34	68	86	97	66	38
\$500,000 and over	42	66	43	20	57	55	94	94	38	90	88	95	86	52
Monthly income groups														
Under \$900	5	6	13	5	5	4	33	42	5	10	44	62	7	8
\$900 - \$1,999	9	14	27	13	22	12	55	60	12	16	82	90	14	10
\$2,000 - \$3,999	20	26	39	21	46	26	78	76	17	23	93	97	17	14
\$4,000 and over	42	49	51	27	69	53	89	89	30	43	94	97	33	26
Age of head														
Under 35 years	9	13	21	13	18	10	36	40	8	9	73	88	11	10
35 - 44 years	14	23	27	18	33	22	68	69	16	20	85	92	19	18
45 - 54 years	18	23	33	18	42	31	73	78	19	30	85	92	20	20
55 - 64 years	18	26	36	18	43	39	74	80	18	31	81	89	16	15
65 years and over	13	21	32	11	15	8	61	73	9	19	58	71	7	5

Sources: Canada: Survey of Consumer Finances, 1984; U.S.: Survey of Income and Program Participation, 1984.

* For the U.S. data, the proportion of households owning equity in other real estate represents the sum of individually published proportions relating to ownership of rental property and other real estate (including vacation homes or cottages). As a consequence, the proportion of Americans holding other real estate may have been slightly over-estimated due to double-counting.

Among the wealthiest American households (wealth of \$500,000 and over), 95% owned one or more motor vehicles, 90% had real estate other than their home, 66% had stock holdings, and 52% were engaged in business, farm or professional interests. The corresponding rates among their Canadian counterparts were 88% for vehicles, 38% for other real estate, 42% for stock holdings, and 86% for business, farm and professional interests.

Among Canadian households with monthly incomes of \$4,000 and over, 51% had Canada Savings Bonds, 69% had registered savings (mostly in the form of savings held in Registered Retirement Savings Plans) and 89% were living in their own homes. Among American households with similar incomes, only 27% held U.S.

Savings Bonds, 53% had savings in the Individual Retirement Accounts (IRAs) or Keogh Plans (retirement plans for self-employed individuals) and 88% owned a home. More than 40% of all Americans with such incomes owned real estate other than a home compared with 30% of their Canadian counterparts.

More elderly households in the U.S. owned a home (73% compared with 61%). The American elderly also owned more additional real estate such as rental property, land and other property. They were also more likely to have stock holdings and motor vehicles. Among the Canadian elderly households, the proportion owning savings bonds and registered savings exceeded their American counterparts.

Table 4
Percentage composition of wealth of households by selected characteristics, Canada and U.S., 1984

Characteristics	Components of Wealth											
	Canada – Equity in						U.S. – Equity in					
	Total financial assets*	Owner occu- pied home	Other real estate	Motor vehi- cles	Busi- ness	Total wealth	Total finan- cial assets *	Owner occu- pied home	Other real estate	Motor vehi- cles	Busi- ness	Total wealth
%												
Total	25	39	7	5	24	100	29	41	14	6	10	100
Wealth groups												
Negative or zero	24	12	2	42	20	100	24	34	0	41	1	100
\$1 - \$4,999	41	7	2	48	2	100	24	11	0	63	2	100
\$5,000 - \$9,999	41	20	3	34	2	100	25	26	3	44	2	100
\$10,000 - \$24,999	31	46	4	17	2	100	21	49	5	23	2	100
\$25,000 - \$49,999	22	59	5	10	4	100	18	64	5	11	2	100
\$50,000 - \$99,999	24	59	6	6	5	100	20	63	6	8	3	100
\$100,000 - \$249,999	30	42	8	4	16	100	29	48	12	5	6	100
\$250,000 - \$499,999	26	27	9	2	36	100	35	32	17	3	13	100
\$500,000 and over	17	14	6	1	62	100	41	16	20	1	22	100
Monthly income groups												
Under \$900	23	48	5	4	20	100	20	53	11	6	10	100
\$900 - \$1,999	25	41	7	6	21	100	26	48	11	7	8	100
\$2,000 - \$3,999	24	42	7	6	21	100	27	45	13	7	8	100
\$4,000 and over	28	28	7	3	34	100	37	30	16	4	13	100
Age of head												
Under 35 years	19	37	6	11	27	100	19	41	9	15	16	100
35-44 years	18	42	6	6	28	100	19	47	13	7	14	100
45-54 years	22	39	7	5	27	100	25	39	15	6	15	100
55-64 years	29	38	8	4	21	100	31	40	16	5	8	100
65 years and over	37	38	5	3	17	100	43	38	12	3	4	100

Sources: Canada: Survey of Consumer Finances, 1984; U.S.: Survey of Income and Program Participation, 1984.

* Total financial assets include deposits in financial institutions, non-government bonds, treasury bills, stock holdings, savings bonds, registered savings, mortgages held, loans to other persons and businesses and other financial assets such as trust funds.

Composition of wealth

In both countries, equity in owner-occupied homes was the largest and most important component of wealth holdings.

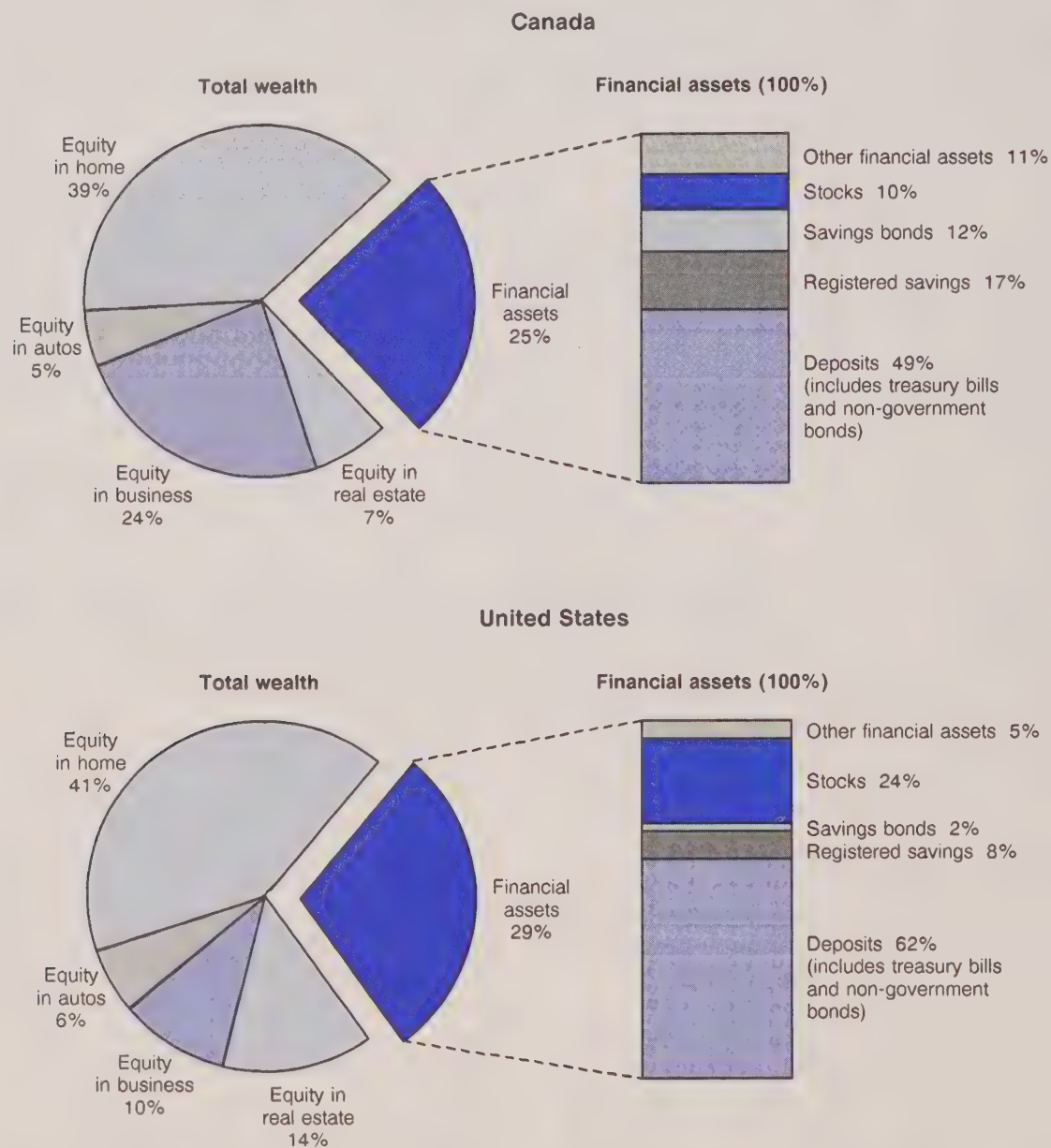
Since equity in a home depends on the market value of the home and the size of the mortgage outstanding on it, a higher market value accompanied by a smaller mortgage debt results in a higher equity. In the U.S. in 1984, the median market value of a home was \$59,700 and the median mortgage outstanding (for debtors only) was \$21,200; the corresponding estimates for Canada in 1984 were \$49,200 and \$27,100.⁴

Financial assets (bank deposits, treasury bills, savings bonds, registered savings, stock holdings, loans to other persons and businesses, and other miscellaneous financial assets) accounted for 25% of the total wealth of Canadians compared with 29% for Americans. The higher representation of financial assets in the total wealth of Americans was largely due to their comparatively larger holdings in stocks and mutual fund shares - 24% of total financial assets compared with only 10% for Canadians.

Savings held in savings bonds and registered plans constituted 7% of the total wealth of Canadians compared with only 2%

Composition of wealth of households, 1984

Stock holdings account for nearly one-quarter of the total financial assets of Americans compared with one-tenth for Canadians.



Source: Canada: Survey of Consumer Finances
U.S.: Survey of Income and Program Participation

for Americans. Equity in real estate other than owner-occupied homes, on the other hand, accounted for 13% of the total wealth of the U.S. households compared with only 6% for Canadians.

Overall, the percentage composition of wealth of households in Canada and the U.S. did not show much variation. The composition of wealth varied by a household's total wealth, monthly income group, age of head and homeownership status (Table 4). The composition was most similar for Canadian and American households with wealth between \$25,000 and \$49,999 and most dissimilar for households holding wealth of \$500,000 and over. The main factors responsible for dissimilarity in the latter group were the predominance of equity in businesses (including farms and professional practices) among Canadians compared to the predominance of real estate (excluding owner-occupied homes) and financial assets such as stock holdings among Americans.

Among the elderly, equity in an owner-occupied home accounted for 38% of total wealth in both countries. Financial assets, on the other hand, accounted for 37% of total wealth in Canada compared with 43% in the U.S. The make-up of financial assets also varied; for instance, savings held in banks and other financial institutions accounted for 59% of the total financial assets in Canada compared with 70% in the U.S. The elderly in Canada held 24% of their financial assets in Canada Savings Bonds and Registered Retirement Savings Plans; their counterparts in the U.S., however, held only 4% in U.S. Savings Bonds, Individual Retirement Accounts and Keogh accounts. Some of these differences are attributable, first, to the inter-country differences in income tax provisions,⁵ second, to the difference in the treatment of accrued interest on such savings and bonds (for instance, such interest is included in the Canadian data but excluded in the American data), and

third, to the differences in periods of inception of these plans. For example, the Registered Retirement Savings Plans in Canada were introduced in 1957, whereas the Individual Retirement Accounts in the U.S. started in 1974 and the Keogh plans in 1962.

The gap in mean wealth

What accounts for the gap in the overall mean wealth of Canadian and American households? Part of the difference (less than 20%) arises from the differing rates of ownership of specified assets, but almost half the difference is due to the varying holdings of such assets. The remaining difference comes from the combined effect of these two factors.⁶

Since income and wealth are strongly associated, a difference in income levels of households in the two countries would also account for some difference in their respective holdings of wealth. Almost all of the difference in mean wealth holdings in the two countries can be attributed to households with monthly incomes of \$4,000 and over. For example, one of every eight American households had a monthly income of \$4,000 or more compared with only one of every fifteen Canadian households. The differences in the numbers and wealth holdings of households with monthly incomes of under \$900 accounted for less than 5% of the difference in mean wealth holdings.

As well, the difference in age structures of households may contribute to the difference in mean wealth holdings; for instance, the proportion of households with heads 65 years and over was higher in the U.S. than in Canada. The analysis showed that 76% of the overall difference in mean holdings of wealth was attributable to differences in the number and amounts held by this group alone. On the other hand, for households with heads under 35 years of

age, the gap in mean wealth was in favour of Canadians. The differences in numbers and wealth holdings of households with heads in the 55-64 age group accounted for 31% of the total gap in mean wealth of American and Canadian households.

Inequality in the distribution of wealth

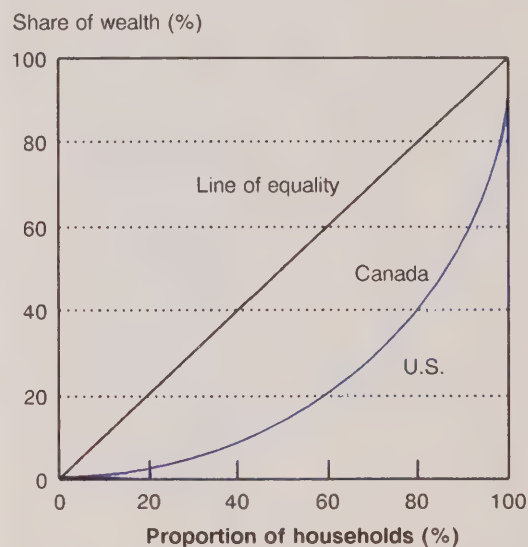
The "Lorenz Curve" depicts a link between the distributive shares of a variable such as total income or wealth held by segments of a population. For the distribution of wealth, the curve is drawn by plotting the cumulative proportion of households (based on the order of their size of wealth) on the horizontal axis against the cumulative proportion of aggregate wealth held by these units on the vertical axis. If all households had exactly the same relative wealth, a perfect equality would prevail, resulting in a diagonal usually referred to as the "line of equality". However, as the actual curve falls below this line of equality, the greater the area between this line and the curve, the greater the inequality in the distribution of wealth.

Wealth is more unequally distributed in the U.S. than it is in Canada. The index of wealth concentration (or Gini coefficient), lies between 0 (a value indicating perfect equality) and 1 (a value indicating extreme inequality). The Gini coefficients derived from these Lorenz Curves were 0.69 for the U.S. compared with 0.65 for Canada.⁷ Whether calculated on the basis of total wealth, total wealth less equity in home, or total wealth less equity in business interests, all Gini coefficients for Canada were lower than for U.S. households (Table 5).

For both Canadian and American households, the ownership of a home and its resulting equity lessened inequality in the distribution of wealth – by 8.2% for Canadians and by 11.2% for Americans. Equity in a business, on the other hand, increased inequality in the distribution of wealth –

Lorenz curves showing distribution of wealth among households, 1984

Wealth is more unequally distributed in the U.S. than in Canada.



Source: Canada: Survey of Consumer Finances
U.S.: Survey of Income and Program Participation

Table 5
Selected Gini coefficients for Canada and the U.S., 1984

Item	Canada	U.S.	U.S./Canada ratio
Total wealth	0.65	0.69	1.06
Total wealth less equity in home	0.71	0.78	1.10
Total wealth less equity in business/farm/professional interests	0.57	0.67	1.18

much more so for Canadians than for Americans. Although there was not much difference in the overall proportion of family units

reporting business, farm or professional interests, the equity in such interests accounted for 24% of the total household wealth in Canada compared with only 10% for the U.S. Most of this difference in the relative shares of business equity may be attributable to differences in the collection and compilation of data on business assets, debts, or overall equity in the two surveys.

A greater inequality in the distribution of wealth implies that wealth is more concentrated in the hands of a smaller number of households. For instance, only 1% of all Canadian households held wealth of \$500,000 and over and they controlled 19% of the total household wealth. In the U.S. these households formed 2% of the total, and they held 26% of the wealth. At the other end of the wealth distribution, 34% of all Canadian households with wealth under \$10,000 held about 2% of the total wealth compared with 33% of their American counterparts holding less than 1% of the total.

Elderly households in the U.S., 21% of the total households, held 28% of the total wealth compared with 18% of their Canadian counterparts holding 19% of the total wealth (Table 2). This implies that the wealth situation of elderly households was relatively better in the U.S. However, the economic picture was reversed for households with heads under 35 years of age; they held 14% of the total wealth in Canada compared with 8% in the U.S., although they represented about 30% of all households in both countries. The question as to why the younger households in Canada and the elderly in the U.S. are relatively better off than their respective counterparts cannot be adequately answered from the type of wealth data currently available. However, one explanation may be that since incomes of Americans, on average, are higher than those of Canadians, their wealth accumulated over time would also be higher.

Conclusion

The mean wealth of households in Canada was \$66,400 compared with \$78,700 in the U.S. Although the demographic mix of households in both countries was quite similar, the proportion of households with monthly incomes of \$4,000 and over, or with heads 65 and over, was higher in the U.S. than in Canada. The differences in numbers and amounts of wealth held by these groups accounted for most of the gap in mean wealth between Canadian and American households.

For households in both countries, home equity was the largest component of their wealth. Americans had more stock holdings and real estate in addition to their home, whereas Canadians held more Canada Savings Bonds and registered retirement savings plans. Compared to Americans, Canadians seemed to be more conservative investors.

Wealth was more unequally distributed in the U.S. than in Canada. For both countries, the ownership of a home and its equity lessened inequality, whereas the ownership of a business and its equity increased inequality in the distribution of wealth.

In addition to the factors discussed in this article, many other factors have an impact on the levels and distributions of wealth in the two countries – for example, differences in social security systems, income tax provisions and coverage under employer-sponsored or work-related pension plans. One could also attribute some of the gap in mean wealth to differences in the national and institutional characteristics that define two separate countries. As well, differences in the operation of financial institutions, interest rates or personal attitudinal factors may also contribute to the gap. □

Notes

¹ Traditionally, a family unit's level of income measures its economic well-being as it affects the purchase of current goods and services. Wealth, on the other hand, can be used in a broader context of total resources available not only to purchase current goods and services but also to meet unexpected future expenditures and provide future economic security.

² All the U.S. data on wealth were taken from the report *Household Wealth and Asset Ownership: 1984*. Comparable data in American dollars for Canadian households were retrieved from the 1984 microdata file on assets and debts of Canadians. The main findings on the rates of ownership of assets and the percentage composition of total wealth would be unaffected by the currency used.

All the Canadian data on 1983 incomes were converted to U.S. dollars using the 1983 average conversion factor of C\$1.00 = U.S.\$0.8114, whereas data on assets, liabilities, and wealth were converted using the exchange rate that prevailed at the time of the survey in May 1984 (C\$1.00 = U.S.\$0.7723).

Since wealth estimates are compiled from household surveys, they are susceptible to both sampling and non-sampling errors. Sampling errors occur because inferences about the entire population are made on the basis of information obtained from a sample of the population. Non-sampling errors include complete refusals, partial responses, inability to recall accurate amounts, as well as editing and processing errors. The survey data on household wealth are somewhat under-reported, especially at the upper end of the income distribution. Therefore, some caution should be exercised in interpreting inter-country wealth comparisons (see for example, Avery et al.).

³ In respect to the dividend and interest income, for instance, the Canadian tax provisions allowed a deduction of up to \$1,000 in 1984 whereas the U.S. had no such exemptions. A taxpayer in the U.S. was entitled to exclude from gross income up to \$100 (or \$200 on a joint return) of dividend income received from domestic corporations.

⁴ Estimates for Canada were compiled from the 1984 SCF whereas estimates for the U.S. were taken from the following sources: (a) for estimates of market value of home, Table A-2, *Annual Housing Survey, 1983: Financial Characteristics of the Housing Inventory* and (b) for estimates of mortgage outstanding (debtors only), *Survey of Consumer Finances, 1983, A Second Report*.

⁵ For instance, under the Registered Retirement Savings Plan in Canada, a worker could deduct a maximum amount of \$3,500 in 1984 if covered by some other work-related pension plan; otherwise maximum contributions of \$5,500 were tax exempt. In the U.S., a worker holding an Individual Retirement Account could deduct a maximum of \$2,000 (or \$2,250 for a non-employed spousal IRA).

⁶ A relative share technique, based on the addition and subtraction of expected values, was used to study the gap in mean wealth of Canadian and American households by their socio-demographic characteristics. Details of this method are available from the author on request.

⁷ The Gini coefficients for income distributions were 0.389 for the U.S. compared with 0.369 for Canada. In both countries, then, wealth was more unequally distributed than income.

References

- Avery, R.B., G.E. Elliehausen and A.B. Kennickell. "Measuring Wealth with Survey Data: An Evaluation of the 1983 Survey of Consumer Finances", *The Review of Income and Wealth* (No. 4). International Association for Research in Income and Wealth, New Haven, Connecticut, December 1988, pp. 339-369.
- Braun, D. "Multiple Measurements of U.S. Income Inequality", *The Review of Economics and Statistics* (Vol. LXX, No. 3). Elsevier Science Publishers B.V. (North-Holland), Amsterdam, 1988, pp. 398-405.
- Carroll, C. and L.H. Summers. "Why Have Private Savings Rates in the United States and Canada Diverged?", *National Bureau of Economic Research Inc.*, Working Paper No. 2319. Cambridge, Massachusetts, July 1987, p. 32.
- Federal Reserve Board of Washington. "Survey of Consumer Finances, 1983: A Second Report", *Federal Reserve Bulletin* (Vol. 70, No. 12). Board of Governors of the Federal Reserve System, Washington, D.C., December 1984.
- Gunderson, M. *Economics of Poverty and Income Distribution*. Butterworths, Toronto, 1983.
- Harrison, A. *The Distribution of Wealth in Ten Countries*. H.M. Stationery Office, London, G.B., 1979.
- Household Economic Studies. "Household Wealth and Asset Ownership: 1984", *Current Population Reports* (Series P-70, No. 7). U.S. Department of Commerce, Bureau of the Census, Washington, D.C., July 1986.
- Kloby, J. "The Growing Divide", *Monthly Review*. Monthly Review Press, New York, September 1987.

References – Concluded

Morgan, J.N. "Measuring the Economic Status of the Aged", *International Economic Review* (Vol. 6, No. 1). Kansai Economic Federation, Osaka, Japan, January 1965, pp. 1-17.

National Bureau of Economic Research. *NBER Summary Report: Taxes and Capital Formation*. Cambridge, Massachusetts, 1986.

Organisation for Economic Co-operation and Development. *The Taxation of Net Wealth, Capital Transfers and Capital Gains of Individuals*. Paris, 1988.

Pasquariello, R.D. "The Skewing of America's Wealth", *The Christian Century*. Christian Century Co., Chicago, February 1987, pp. 164-166.

Pechman, J.A. *Tax Reform and the U.S. Economy*. The Brookings Institution, Washington, D.C., 1987.

Projector, D.S. and G.S. Weiss. *Survey of Financial Characteristics of Consumers*. Board of Governors of the Federal Reserve System, Washington, D.C., 1966.

Radner, D.B. "Net Worth and Financial Assets of Age Groups", *Social Security Bulletin* (Vol. 52, No. 3). U.S. Department of Health and Human Services, Social Security Administration, Washington, D.C., March 1989, pp. 2-15.

Statistics Canada. *Income Distributions by Size in Canada, 1983* (13-207). Minister of Supply and Services Canada, Ottawa, March 1985.

U.S. Department of Housing and Urban Development. "Annual Housing Survey, 1983", *Current Housing Reports* (H-170). U.S. Department of Commerce, Bureau of the Census, Washington, D.C., 1985.

The performance of trusteed pension funds

Diane Galarneau

With reserves approaching \$158 billion at the end of 1988, trusteed pension funds amounted to more than five times the federal deficit! Since a considerable part of these reserves comes from salary contributions and these funds will be used to pay many of our retirement pensions, we may well wonder how they are invested and what factors affect their rate of return on the financial markets.

This article examines the rate of return on trusteed pension funds in terms of two important characteristics: the sector (public or private) and the investment decision maker. These characteristics were selected because they reveal fundamental differences in fund investment practices.

For example, public sector funds are often subject to regulations requiring the investment of a large portion of the assets in bonds. This policy significantly affects a fund's margin of flexibility on the financial markets. Private sector funds, however, only have to observe restrictions applicable to funds in general.

Similarly, the investment decision maker influences pension fund investment policy. The fund may be managed by trustees, investment counsellors or employers. Although a high rate of return is not

the only goal of pension fund managers, it is an important one.

This study concludes by comparing trends in pension fund returns with two market indexes – the TSE Composite Index and the Universe Bond Index. These indexes are conceptually similar to the two main investment instruments of pension funds, stocks and bonds.

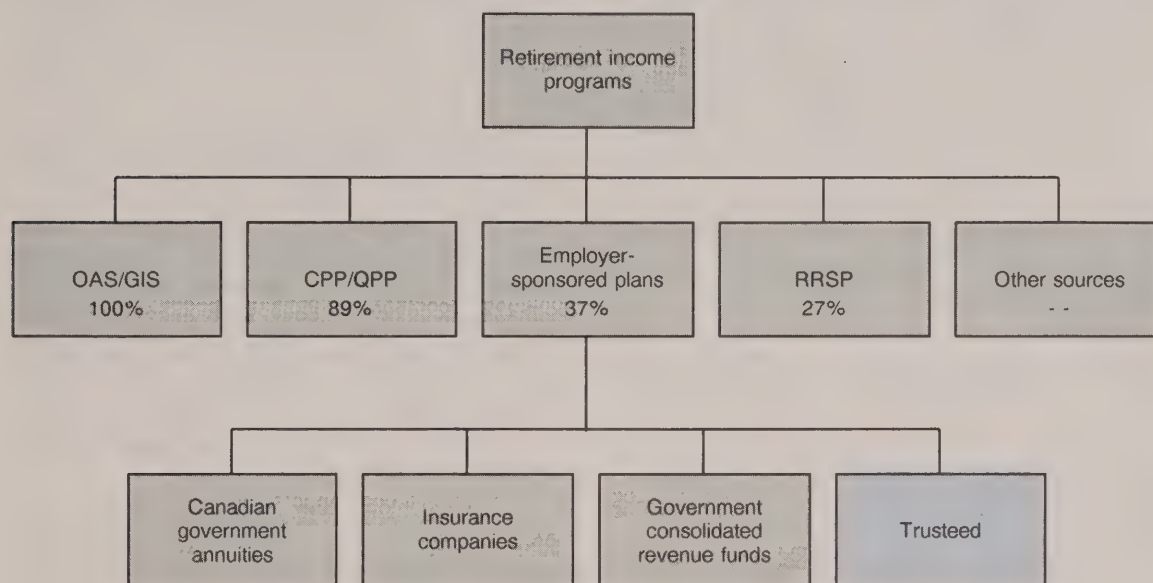
A three-tiered system

Let us first place trusteed pension plans in the context of the overall structure of retirement savings in Canada. Income support for the elderly is based on a three-tiered system. The first tier consists of the Old Age Security and Guaranteed Income Supplement programs (OAS/GIS), which provide universal benefits unrelated to work history. The second covers the contributory Canada Pension Plan and Quebec Pension Plan (CPP/QPP) and the third encompasses employer-sponsored pension plans, registered retirement savings plans (RRSP) and other sources of personal savings.

This study concentrates on one component of the third tier, trusteed pension plans. These plans are governed by a trust arrangement, which is only one alternative for the funding of pension plans. However, they account for the largest proportion of the reserves held on behalf of employer-sponsored pension plans (57% in 1987) and cover the largest proportion of the membership in these plans (approximately

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Proportion of labour force covered by various retirement income programs, 1987



Source: Survey of Pension Plans in Canada, Labour Force Survey

71%).¹ Other methods for funding pension plans include insurance company contracts and government consolidated revenue arrangements.

The data used for the calculation of the rates of return were taken from the annual Survey of Trusteed Pension Funds. Results are shown over a ten-year period from 1978 to 1988. This period was marked by interesting developments in the Canadian economy, including high inflation from 1978 to 1981, the 1981-82 recession and the stock market crash in the fall of 1987, otherwise known as "Black Monday".

Rates of return compared by different pension fund characteristics

This section provides an analysis of the overall rate of return² for pension funds, followed by a comparison of rates of return

Concepts and definitions

In this article, a trustee pension fund is defined as an arrangement under which pension plan contributions are deposited with a trustee who is responsible for their administration. The trust is a fiduciary relationship in which a group of three or more individuals, or a trust company or an incorporated pension fund society holds title to the assets of the fund on behalf of the plan members, in accordance with the terms of a written trust agreement. In many cases, the individual fund may be split among different investment managers through contractual arrangements with several trust companies, insurance companies or investment counsellors.

The concept of a "fund", as opposed to a "plan", is used for measuring the rate of return. There is a difference between the two, as the reserves of several plans may be invested in the same fund. Accordingly, in 1988 there were about 3,700 trustee pension funds and 5,400 trustee pension plans.

Table 1
Reserves and membership in employer-sponsored plans

Funding agency	Proportion of all plans	
	Reserves in 1987	Members in 1988
	%	%
Trusteed	57	71
Insurance companies	13	14
Government consolidated revenue funds	30	15
Canadian government annuities	--	--

Sources: *Survey of Trusteed Pension Funds and Survey of Pension Plans in Canada*

by sector and investment decision maker. These findings are then linked with the asset portfolio.

Rates are evaluated primarily on the basis of their real value in order to avoid the effect of inflation. Basing the entire study on the nominal rate might have led to a confusion of periods of real growth with inflationary growth. To convert a nominal rate of return into real terms, the rate of inflation based on the consumer price index for the same period is subtracted from the nominal rate.

Pension funds must fulfil other objectives besides profitability and are subject to restrictions; these can influence their investment policies and consequently affect their rate of return. For instance, a fund manager must ensure that the fund will be able to meet its obligations to future recipients. Such a constraint discourages excessive risk taking.

The degree of liquidity required in the fund may also pose a restriction on investment possibilities and affect investment policy. As well, some public sector funds are required by regulation to hold government bonds; it is not known to what extent yield is affected by this measure although it probably decreases as a result. In a similar

vein, Revenue Canada imposes a penalty on funds that have over 10% of their assets invested abroad; this practice limits foreign investment and probably also affects the rate of return.

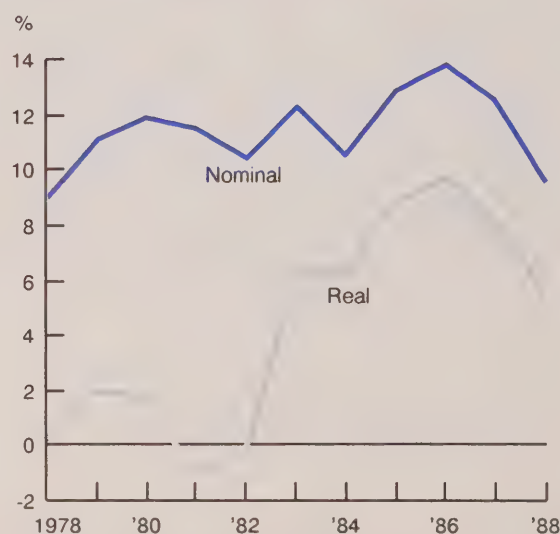
Rates for all funds

During the 1978 to 1988 period, the nominal rate of return ranged from 8.9% to 13.8%, while the real rate fluctuated between -1.0% and 9.7%. From 1978 to 1982, there was a considerable spread between the real and nominal rates because of a high inflation rate. Consequently, even though the nominal rate of return reached fairly high levels during this time, price increases considerably reduced the real returns on trustee pension funds.

However, from 1983 to 1986, the real rate showed a marked increase, due to a lower inflation rate and considerable growth in financial markets. This rapid increase in

Nominal and real rates of return on pension funds

The gap between the two rates was wider prior to 1982 mainly because of inflation.



Source: *Survey of Trusteed Pension Funds*

the real rate also reduced the gap between it and the nominal rate.

The stock market crash in late 1987, resulting from the price drop for most stocks, accounted for the decrease in the real and nominal rates for that year and 1988. However, due to exceptional growth in profits made on stock sales during the first three quarters of 1987, the real rate of return was still high for this year in comparison with the rest of the period under study. In 1988, the effects of the stock market readjustment were more pronounced. A drop in profits on stock sales was mostly responsible for the drop in the rate of return that year. In fact, profits in 1988 amounted to less than one-third of the profits in 1987.

Real rate of return on funds by sector

Although most public sector funds are excluded in this study (see *Public and private sector funds*), those which are included are usually large in both membership and assets. In 1988, only 211 of the 3,700 funds were in the public sector, but they covered 43% of all members and 52% of total assets.

Public and private sector funds

Public sector funds are those set up by the federal, provincial and municipal governments. They also include those of crown corporations and some educational and health-related institutions. Most of the funds associated with public service employees are not covered by this study, however. This is because their contributions are paid into the consolidated revenues of the applicable governments and are used for general government purposes. In other words, these plans have no invested assets, so none of the funds are channelled into the financial markets.

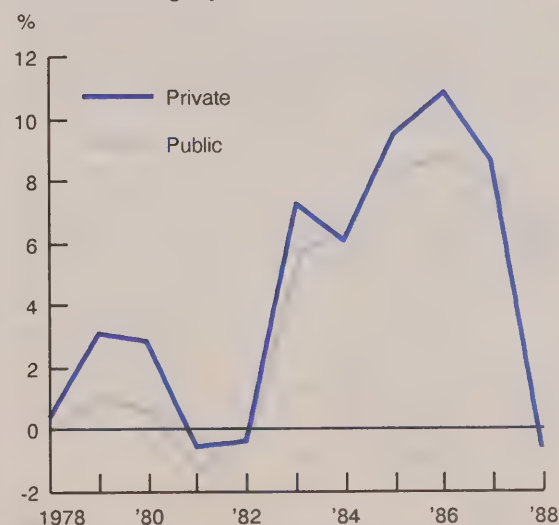
Private sector funds are those established by incorporated and unincorporated companies, cooperatives, religious organizations, unions, charities and any other organization not belonging to the public sector.

Some public sector funds are subject to restrictive investment policies. As a result, a high proportion of public sector funds is held in bonds. From 1978 to 1988, public sector funds invested an average of 59% of their assets in bonds, compared with close to 35% for private sector funds. On the other hand, private sector funds had higher average stock holdings for the same period, amounting to 30% of total assets, versus 17% for public sector funds.

It is generally recognized that stocks have higher associated risks than bonds, but their expected returns are also greater. The standard deviation of the rate of return on an investment over a given period of time was used to estimate the associated risk (Ezra, 1979). The standard deviation is a statistical measure of variation. If the standard deviation of the return on one investment is high in comparison with another, it means that the rate of return is more variable and therefore carries a higher risk.

Real rate of return by sector

The real rate of return on public sector funds tends to be slightly lower.



Source: Survey of Trustee Pension Funds

Table 2 shows the average real rate of return and its standard deviation for stocks and bonds, as measured by Scotia McLeod, for 1978 to 1988.³ The rate of return on bonds includes not only the interest rate but also the fluctuation in the price of the bonds. There is an inverse relationship between market interest rates and bond values (or prices). For example, if the market interest rate increases this year, the value of a bond purchased last year declines. This occurs because an equivalent amount invested this year would yield a higher return.

Table 2
Average performance of stocks and bonds on the financial market, 1978 to 1988

	Universe Bond Index	TSE 300 Index
Average real rate of return	5.0%	12.2%
Standard deviation	10.6	23.0

Source: Scotia McLeod

The standard deviation for stock investments is considerably higher than for bonds. This suggests that stock investments expose funds to higher risks than bonds but their expected rate of return is higher. In fact, the average rate of return on stocks is over double that for bonds.

Table 3
Average performance of pension funds by sector, 1978 to 1988

	Public sector	Private sector
Average real rate of return	3.8%	4.2%
Standard deviation	3.7	4.2
Average proportion of funds accounted for by:		
Bonds	59%	35%
Stocks	17%	30%

Source: Survey of Trustee Pension Funds

From 1978 to 1988, the average rate of return and the standard deviation were somewhat higher for funds in the private sector than for those in the public sector (Table 3). However, if the average rate of return is recalculated for the 1978-87 period (to remove the effect of the stock market crash which was felt more strongly in 1988), it rises to 4.7% for private sector funds and drops to 3.6% for public sector funds. The corresponding standard deviations are 4.0 and 3.8.

It appears that stock market adjustments were more strongly felt in private sector funds because of their greater share of stock investment. It is interesting to note that before the crash the rate-of-return gap between the sectors was wider, whereas the standard deviation gap was smaller.

As previously stated, the overall rate of return for all funds was calculated without considering the other objectives and restrictions imposed on pension fund managers. For example, the large proportion of government bonds that some public sector funds are required to hold has a negative impact on the rate of return but definitely meets other objectives. For this reason, it is difficult to say whether the funds are performing "well" or "poorly" overall because, in the end, each manager must judge this for the particular fund in question, according to its specific set of objectives.

It is also interesting to note the considerable difference between the standard deviations for the rates of return of the two market indexes (Table 2) and those shown by sector (Table 3). It might be expected that since private sector funds have a higher proportion of stock investments, the standard deviation of their average rate of return should be closer to that shown for stocks in Table 2. In fact, the market indexes represent a combination of all stocks and bonds available on the market but pension fund managers do not necessarily opt for the securities included in these indexes. The

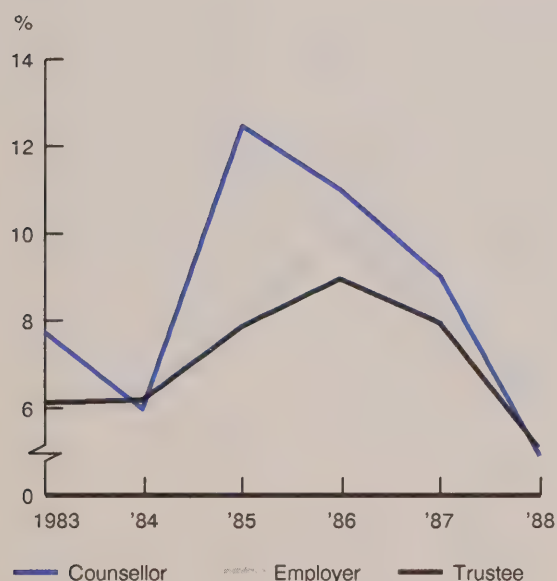
difference between the standard deviations found in these two tables may mean that pension fund managers are choosing investments that are less risky on average than the market in general.

Real rate of return by investment decision maker

Trust companies are not the only managers or investment decision makers of trustee pension funds. Investment decisions can also be made by employers or investment counsellors. In 1988, investments were employer-directed for 29% of the total assets of pension funds. These funds are, for the most part, in the public sector where managers are sometimes required by regulation to hold a portion of the fund assets in government bonds.

Real rate of return by decision maker

Investment decisions based on the advice of counsellors generally show a higher rate of return.



Source: Survey of Trustee Pension Funds

Funds whose assets were invested through investment counsellors held 27% of total assets in 1988. Most of these are in the private sector, since the public sector rarely uses such advisors.

Trustees managed the investment of the largest proportion of fund assets, directing over 43% of the total. Public sector funds make the most frequent use of trustees for the management of their portfolios, while private sector funds have tended to rely on them less since the early 1980s, favouring investment counsellors instead.

Because data on investment decision makers have been collected only since 1983, the following analysis covers the 1983-88 period. The rate of return on investment counsellor-directed funds averaged 8.5% between 1983 and 1988, the highest rate among the three types of investment decision makers (Table 4). Investment counsellors normally favour a higher proportion of stock investments, which carry a higher risk. The standard deviation associated with their portfolios is in fact higher (2.7 compared with 1.4 and 1.3 for funds invested by employers and trustees).

Table 4
Average performance of pension funds by decision maker, 1983 to 1988

	Investment counsellor	Employer	Trustee
Average real rate of return	8.5%	7.4%	7.0%
Standard deviation	2.7	1.4	1.3
Average proportion of funds accounted for by:			
Bonds	40%	59%	40%
Stocks	35%	19%	28%

Source: Survey of Trustee Pension Funds

Even though the proportion of stock investments is higher for funds invested by trustees than for employer-directed funds,

the rate of return for trustees is somewhat lower and the standard deviation is about equal. This may be attributable to the types of stock held by funds with investments that are handled by trustees. It would seem that the characteristics of these stocks are closer to those of bonds in terms of risk to the fund and their rates of return. However, the data are not available to determine the composition of fund portfolios.

Real rate of return of two market indexes compared with pension funds

This section compares the rate of return on trustee pension funds with that of the two market indexes: the TSE Composite Index and the Universe Bond Index. These indexes are conceptually similar to the two most common investment vehicles in the pension fund area – stocks and bonds. This comparison shows the relative position of pension funds with respect to returns.

In 1988, stocks and bonds constituted almost three-quarters of trustee pension fund assets (Table 5). Note the slight decrease in the proportion of bonds from 1980 to 1988, despite favourable terms offered for these instruments during the period. Stocks, on the other hand, showed a strong proportionate increase, which may be linked to a rise in stock prices in the early 1980s.

Table 5
Distribution of assets of trustee pension funds, 1980 and 1988

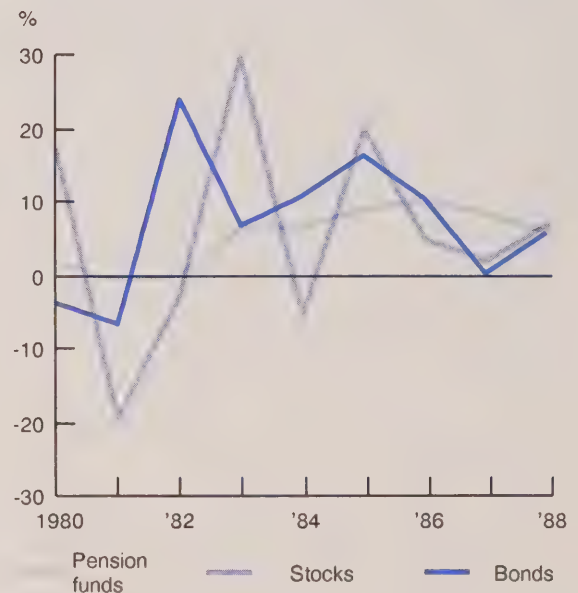
	1980	1988
	%	
Total assets	100	100
Bonds	49	45
Stocks	20	27
Other investments	30	28

Source: *Survey of Trustee Pension Funds*

"Other investments" cover mainly short-term, cash and mortgage investments. Short-term investments increased their portion of total assets from 9.3% to 12.5% between 1980 and 1988, while mortgage investments continued to decline over the period. The attractive interest rates offered on short-term investments for some portions of this period, combined with a loss of investor confidence in a volatile market, explain the growth in this area. Despite this increase, the effect of short-term investments on the overall rate of return on the funds is still too insignificant to be noticeable. The same is true for cash and mortgage investments. For these reasons "other investments" are excluded from the following analysis.

Real rate of return on pension funds, stocks and bonds

The real rate of return fluctuates less for pension funds than it does for stocks and bonds.



Source: *Survey of Trustee Pension Funds* and Scotia McLeod

The rates of return on stocks and bonds between 1980 and 1988 showed similar trends – apart from the 1982-84 period, when the stock market took a year longer than bonds to recover after the recession of the early 1980s.⁴ The rate of return on pension funds fluctuated much less than it did for the two securities, pointing to a relatively low-risk investment policy.

It is interesting to note that even though the real rates of return on stocks and bonds were clearly negative in 1981 due to the recession, the rate of return on the funds themselves stayed close to zero. On the other hand, the negative effect on pension funds of the stock market crash of October 1987 was more pronounced in 1988, at a time when rates of return on stocks and bonds were improving.

One should note that the indexes are made up of a group of stocks and bonds chosen to reflect securities normally available on the market. Pension fund managers choose from these stocks and others those they judge will best meet their objectives. Consequently, they do not necessarily choose the stocks and bonds that are listed in these two indexes, which is one of the reasons why the rate of return on funds shows variations that are different and less extreme than the index rate fluctuations.

Again, this study deals with the overall rate of return on all funds combined. It is therefore possible that the rate of return of particular funds may fluctuate more than that of the combined group, just as others may vary less. The rate given here is a weighted average rate of return for all funds, which falls between the two extremes.

Nevertheless, it seems that pension fund managers are generally inclined to follow a relatively less risky investment policy, since the fluctuations in the rate of

return for the funds are considerably narrower than those of the two indexes used for comparison. It is true that there is some divergence in the case of funds directed by investment counsellors, but these only account for a quarter of the total assets of trustee pension funds.

Conclusion

This study offers an analysis of the rate of return on trustee pension funds in terms of their different characteristics and compares the rate with some financial market indexes. The rate of return was calculated for all of the funds combined.

The real rate was considerably lower than the nominal rate from 1978 to 1982. This is attributed to the relatively high inflation rate during that period, following which the real and nominal rates moved closer together.

Fund portfolios in the private sector contain a higher proportion of stocks than those in the public sector. Even though such investments generally increase the level of risk to a fund, the estimated risk and real rate of return for private sector fund portfolios are only slightly different from those of public sector funds.

The investment management of a fund may be entrusted to investment counsellors, employers or trustees. Funds invested by counsellors tend to have a higher proportion of stocks, which increases the associated risks but also leads to a higher rate of return.

The real rate of return on stocks and bonds fluctuated substantially and in a similar fashion from 1980 to 1988, while the return on pension funds was much more stable. This implies a relatively low-risk investment policy for pension funds in general. □

Technical notes

The formula for the rate of return used in this article is calculated on an annual basis and is adapted from Peter O. Dietz's classic equation, which can be summarized as follows:

$$R = \frac{(I + P - L)}{0.5 * (A_1 + A_2 - I - P + L)}$$

where:

- R = annual rate of return
- I = investment income
- P = profits on the sale of securities
- L = losses on the sale of securities
- A₁ = value of assets at the beginning of the year
- A₂ = value of assets at the end of the year

The equation's denominator assumes that contributions to a fund are either made entirely in the middle of each year or half are made at the beginning of each year and the other half are made at the end.

The book value of assets has been used to calculate the rate of return on pension funds. It is usually recommended that the market value be used since it is supposed to reflect the current price of securities on the market, while the book value, in theory, represents the price of securities at the time they were acquired. Since an acquisition can have taken place many years before and its book value may be far removed from its current value, when rates of return are calculated, the current (or market) value of the security is usually preferred.

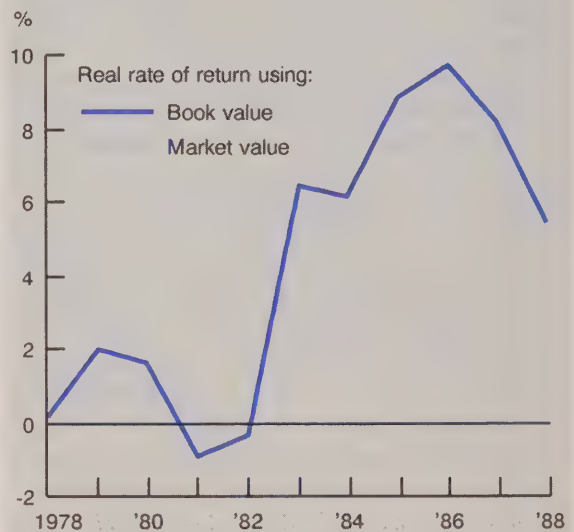
However, a number of respondents to the survey do not report the market value so it must be estimated more frequently than the book value. In addition, it is often difficult to distinguish between the book value and the market value of an asset. For example, it is known that pension fund managers periodically adjust the book value of their securities to better reflect their worth on the market. It is this "adjusted"

book value which is reported in the Survey of Trustee Pension Funds and which has been used in this study.

The following compares the rate of return based on the book value with the rate based on the market value. Up to 1982, there is little difference between the two rates. But, from 1983 to 1986, the rates tend to diverge, then they begin to converge again. This pattern can be explained by fluctuations observed in financial markets which led to increases in the market value of stocks from 1983 to 1986. Since the asset value appears in the denominator of the equation, the rate based on the market value increases more slowly over this period.

Real rate of return on total assets of pension funds

Since 1983, the rates have diverged because of the rapid growth in market value.



Source: Survey of Trustee Pension Funds

Given these observations, it appears that the rates of return shown in this study may be upwardly biased. However, this bias is preferable to the unknown bias of a rate based on a more frequently estimated market value.

Notes

¹ Also included in this category are members of plans managed by a combination of trust and insurance companies.

² In this article, the rate of return has been calculated using the book value of assets. See the *Technical notes* for details.

³ The rate of return on bonds corresponds to the real rate of return on the Universe Bond Index and the return on stocks to the real rate of return on the Toronto Stock Exchange Composite Index (TSE 300).

⁴ The real average *annual* rate of return on the Scotia McLeod Universe Bond Index was used to estimate the rate of return on bonds. For stocks, Scotia McLeod's real average *annual* rate of return on the TSE 300 was used.

References

Dietz, P.O. *Pension Funds: Measuring Investment Performance*. The Graduate School of Business, Columbia University and The Free Press, New York, 1966, pp. 50-51.

Ezra, D.D. *Understanding Pension Fund Finance and Investment*. Pagurian Press Limited, Toronto, 1979, p. 155.

Maynard, J.-P. *Analyse de l'impact de la réglementation des pouvoirs de prêts et placements des régimes supplémentaires de rentes au Canada*. École des gradués de l'Université Laval, Cité Universitaire, Québec, February 1988.

Scotia McLeod. *Investment Return*. Toronto, March 1989.

Statistics Canada. *Trusteed Pension Funds: Financial Statistics* (74-201, annual). Minister of Supply and Services Canada, Ottawa.

The graduates of '82: where are they?

Ernest B. Akyeampong

The Canadian labour market is not static. The recent economic recession and recovery, industrial restructuring and technological change have had a profound impact, and will continue to do so. How have young workers, especially the highly educated ones, fared through these developments? This study offers some insights by examining the experiences of a recent (1982) group of Canadian university and community college graduates over a five-year period, 1982-1987.¹

Of particular interest in this study are:

- Which fields of study offered the best employment opportunities and earnings?
- How good was the match between a graduate's job and the field of study?
- What was the pattern of interprovincial mobility following graduation?
- How different were the short- and longer-term school-to-work transitional experiences?

Field of study

Most of the analysis in this study revolves around the various fields of study of the 1982

graduates. Education and the combined group of commerce, economics and law were the two most popular fields of study among the university graduates, each accounting for 19% of the total (Table 1). Among the community college graduates, health sciences was the most popular field (18%), followed closely by management and administration (16%) and by secretarial science and merchandising (15%).²

The distribution of graduates by field of study revealed not only the persistence of some traditional patterns, but also the emergence of new trends. For example, men continued to dominate in engineering and physical sciences, and women in education, health sciences and secretarial science. Among the more notable shifts were the increased enrolment in electronics, mathematics and computer science, and the increased proportion of women in commerce and business.³

Post-graduation employment experiences

To follow the employment fortunes of the 1982 graduates through the various phases of the recent business cycle, three dates were selected as reference periods in this study. The first date occurs approximately half a year following the students' graduation (January 1983) and roughly coincides with the end of the most recent economic recession in Canada. The second period (May-

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June 1984) marks the two-year point following graduation, and a year and a half into the economic recovery. The third period (March 1987) occurs approximately five years following graduation and four and a half years into a period of sustained economic growth.

Half a year after graduation (January 1983)

Upon graduation, the class of '82 faced the worst economic recession since World War II. But despite the bleak job market, a high proportion had already established themselves in a job within half a year. For

The National Graduates Survey (1984) and the Follow-up Survey of 1982 Graduates (1987)

The National Graduates Survey was conducted by Statistics Canada in June and July 1984 on behalf of the Department of the Secretary of State and Employment and Immigration Canada. It covered all students who had completed their university, college or trade/vocational program in 1982. The survey assessed, among other things, the labour market and interprovincial mobility experiences of these graduates during the two years following completion of their studies.

To obtain a longer-term perspective of the labour market integration of these graduates, the survey (Follow-up of 1982 Graduates) was repeated in March 1987, about five years following graduation. In total, the two surveys collected information for five reference periods: January 1983, October 1983, May-June 1984, January 1986 and March 1987. However certain data, such as earnings, class of worker and occupation, were collected only for May-June 1984 and March 1987. For a number of reasons (see Note 1) the trade/vocational graduates of 1982 are excluded from this study.

example, approximately three-quarters of both the university and community college graduates held a job in January 1983, compared with 64% of all Canadians in a similar age group (20-30 years).⁴

Despite their overall high employment rate, there were marked differences by field of specialization, even at this early stage. Among the university graduates, for example, the percentage holding a job was highest among those who specialized in education, or in medicine and health sciences (over 80% each); the least employed were graduates in fine arts and humanities, and agriculture and biological sciences

Of the estimated 94,000 university graduates of 1982, approximately 7.5% obtained their degree/diploma from a university in a province other than their home province (the latter being their province of residence before enrolment in university). The comparable proportion for the 53,000 community college graduates was 3.4%. An almost equal number of men and women left their home province to study elsewhere in Canada.

Migration to another province to obtain a university degree was least common among Ontario residents (2%) and most common among those from Prince Edward Island (48%). Ontario also recorded the lowest proportion of its community college graduates obtaining their diploma from another province (less than 1%), and New Brunswick the highest (25%).

Each province experienced an outflow and an inflow of students. On balance, however, only Ontario and Nova Scotia gained more university students than they lost. Similarly, only three provinces received more community college students than they lost: Ontario, Alberta and Prince Edward Island.

Detailed information on these surveys is available from Phil Stevens at (613) 951-9481 or Bill Magnus at (613) 951-4577, Household Surveys Division of Statistics Canada.

Table 1
Distribution of 1982 graduates by field of study and sex

	Both sexes	% Female
University graduates	94,400	51
Education	17,800	67
Fine arts & humanities	14,600	64
Commerce, economics & law	18,000	34
Other social sciences	17,000	60
Agriculture & biological sciences	5,800	51
Engineering	7,800	10
Medical & health professions	7,000	67
Mathematics & physical sciences	5,300	26
Community college graduates	53,100	57
Arts & humanities	5,000	63
Health sciences & related	9,700	88
Chemical & transportation technologies; general engineering, aeronautical engineering & industrial engineering	3,600	18
Electrical & electronics; mathematics & computer science	6,000	22
Mechanical engineering; architectural & construction engineering	3,300	8
Natural sciences & primary industries	3,000	27
Social sciences & services	6,300	74
Secretarial science; merchandising; sales & service industry technology	7,700	83
Management & administration	8,300	54

Source: National Graduates Survey

(about 60% each). Of the college graduates, the highest employment/population ratios were found among students from the health and social science faculties (about 80% each); the lowest was recorded for those specializing in natural sciences and primary industries (62%).

Unemployment rates by field of study generally reflected the same pattern as the employment/population ratios (Table 2). For the university graduates, the overall unemployment rate was 10.7%, and for the

college graduates, it was 16.3%. High though these two rates were, they were nevertheless below the 17.9% recorded for the overall national work force of similar age.

Approximately 18% of the university graduates and about 10% of the community college graduates reported they were not in the labour force half a year following graduation. Some of these had returned to school.

Table 2
Unemployment rate by field of study

	Jan. 1983	May 1984	Mar. 1987
	%		
University graduates	10.7	9.4	3.7
Education	6.2	7.3	3.0
Fine arts & humanities	13.1	11.2	4.5
Commerce, economics & law	12.2	10.2	3.2
Other social sciences	12.6	10.7	5.0
Agriculture & biological sciences	15.1	13.6	6.4
Engineering	13.1	9.0	3.1
Medical & health professions	3.6	4.7	1.6
Mathematics & physical sciences	11.7	8.4	4.1
Community college graduates	16.3	9.9	5.4
Arts & humanities	15.4	15.1	6.4
Health sciences & related	12.8	5.5	3.0
Chemical & transportation technologies; general engineering, aeronautical engineering & industrial engineering	22.0	13.1	6.5
Electrical & electronics; mathematics & computer science	21.0	10.1	4.3
Mechanical engineering; architectural & construction engineering	22.1	10.8	7.7
Natural sciences & primary industries	30.8	10.8	12.4
Social sciences & services	11.6	10.1	4.6
Secretarial science; merchandising; sales & service industry technology	12.6	8.5	4.7
Management & administration	15.0	10.6	5.7

Sources: *National Graduates Survey and Follow-up Survey of 1982 Graduates*

Two years after graduation (May-June 1984)

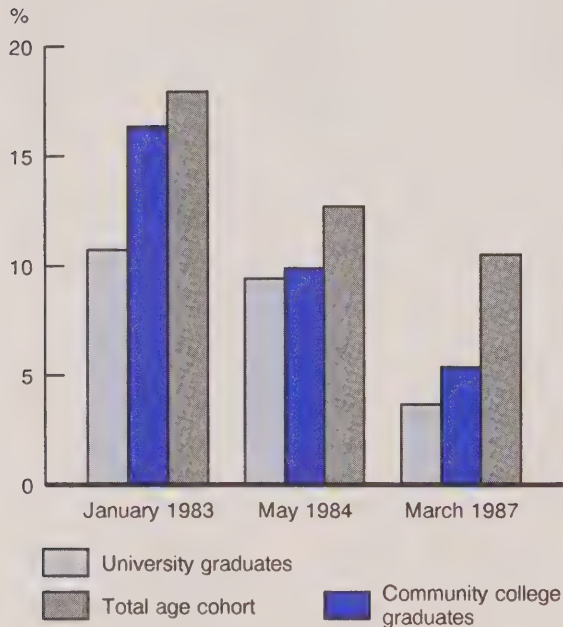
Two years following graduation, the proportion of these former students in jobs had risen by about 10 percentage points each for the university graduates (to 84%) and community college graduates (to 87%). Graduates from all disciplines recorded increases in employment/population ratios. The unemployment rate was down marginally for the university graduates, but dramatically for the community college graduates. The result was an almost identical

unemployment rate for the two groups (9.4% for university graduates versus 9.9% for the college graduates). For the national population of the same age, the employment/population ratio was lower (72%) and the unemployment rate was higher (12.7%).

By field of study, the differences in employment/population ratios noted shortly after graduation persisted, but they were noticeably smaller by this time. In effect, those graduates who had not fared that well during the recession – that is, university graduates in fine arts and humanities and

Unemployment rate of 1982 graduates

At each time of observation, the 1982 university and community college graduates fared better than their contemporaries in terms of the unemployment rate.



Source: Labour Force Survey, National Graduates Survey and Follow-up of 1982 Graduates

other social sciences, and college graduates in engineering, natural sciences and primary industries – witnessed significant improvements in employment opportunities during the early phase of the economic recovery.

Approximately 5% of the university graduates and 1% of the college students reported being back in school on a full-time basis.

Five years after graduation (March 1987)

About five years following graduation, nine in ten of the university and community college graduates had a job. University graduates recorded a five percentage point

employment gain during the three year period following the June 1984 survey but the gain for the college graduates was marginal. Differences in employment/population ratios by field of study had also narrowed much further by this time.

The overall unemployment rate for the university graduates (3.7%) and for the college graduates (5.4%), following four and a half years of continuous economic expansion, had fallen to about one-third of the level recorded at the end of the recession. For the Canadian work force of similar age (25-35), the unemployment rate was much higher, at 10.5%. Very little unemployment existed at this time among the university graduates from the health, education, engineering, and commerce, economics and law fields. Graduates from these fields experienced unemployment rates of less than 4%. The same was roughly true for the college graduates from the health science, electronics and computer science faculties.

In March 1987, approximately 3% of the 1982 university and college graduates reported they were pursuing further full-time studies. At the same time, the proportion of graduates outside the labour force but not in school had roughly doubled from the 1984 level, from 2% to 4%. Approximately 80% of these graduates who were not in the labour force but had not returned to school were women, many of whom may have left the labour force for family or child-rearing reasons.

Education/job match and job satisfaction

How well-matched were the jobs of the 1982 graduates relative to their area of educational specialization? The notion of field of study/job match is complex and often difficult to measure. Occupational concentration ratios – that is, the proportion of graduates from a field of specialization directly employed in that field – may

provide a partial answer. It cannot give us the whole answer because while some fields, such as education, are directly linked to certain occupations (such as teaching), other specializations, such as fine arts and humanities, can be widely applied across occupations. To circumvent this problem, researchers often measure the connection between the two through self-assessment evaluations, that is, the degree to which graduates perceive their jobs as matching their educational specializations. The 1984 and the 1987 follow-up surveys provided occupational concentration ratios and self-assessment indexes that showed a high degree of connection between a graduate's field of study and his or her subsequent job.

The 1982 graduates were employed in a wide range of occupations, but there were noticeable concentrations by field of study. For example, two years following graduation, about 85% of the employed university graduates specializing in health sciences were in medical and health occupations; about 72% of the education graduates were in teaching; and 70% of the engineering graduates were in natural science and engineering jobs. Compared with university graduates, community college graduates were more widely dispersed across occupations. Despite this, large proportions of college graduates in health sciences, and in secretarial/merchandising science ended up in the same occupations. Similar, and in a few cases even larger, occupational concentration patterns were observed when the graduates were reinterviewed in 1987.

A large majority of the graduates perceived their jobs to be related (directly or partially) to their area of specialization. Approximately 77% of the university graduates and 79% of the college graduates expressed this sentiment in May-June 1984. Three years later (March 1987), these indexes had risen to 87% and 85%, respectively. Differences existed by field of study, however. For example, the proportion

expressing some connection between their educational background and their job in 1987 ranged from a low of 78% for the university fine arts and humanities graduates to 95% for graduates from the medicine and health faculties. Among the college graduates, it ranged from 75% for natural sciences and primary industries to 94% for health sciences.

An overwhelming majority of the graduates were satisfied with their jobs. About 91% of the university graduates and 90% of their college counterparts reported being satisfied or very satisfied with their job in March 1987.

Earnings

The 1982 graduates were asked to estimate their annual earnings based on the job they held at the time of the 1984 and 1987 interviews. Earnings differentials are a function of many factors, among them the level of education, experience, the demand for and supply of the skill in question. Bearing these in mind, how did the 1982 graduates fare by field of study? How did their earnings compare to the earnings of all Canadian workers in a similar age group? To ensure more meaningful comparisons, the results reported in this study pertain to persons working full-time at the time of the interviews.⁵

Two years following graduation, the estimated annual earnings of the university graduates working full-time averaged \$25,200. There were, however, marked differences by field of study and sex. Average annual earnings ranged from a low of \$21,200 for the fine arts and humanities graduates to a high of \$31,800 for those who specialized in medicine and health science (Table 3). Male graduates, on average, earned more than their female counterparts (\$26,900 vs. \$23,500). This earnings gap between the sexes prevailed in all disciplines.⁶

Table 3
Average salary of full-time workers by field of study, 1982 graduates

	1984	1987
	\$	
University graduates	25,200	34,100
Education	26,600	32,200
Fine arts & humanities	21,200	27,900
Commerce, economics & law	25,400	37,500
Other social sciences	23,500	30,700
Agriculture & biological sciences	21,300	31,200
Engineering	26,800	36,600
Medical & health professions	31,800	48,300
Mathematics & physical sciences	26,100	34,900
Community college graduates	18,700	25,300
Arts & humanities	15,600	22,100
Health sciences & related	22,100	27,800
Chemical & transportation technologies; general engineering, aeronautical engineering & industrial engineering	20,100	27,900
Electrical & electronics; mathematics & computer science	20,900	28,800
Mechanical engineering; architectural & construction engineering	20,100	27,600
Natural sciences & primary industries	18,700	25,200
Social sciences & services	17,300	23,200
Secretarial science; merchandising; sales & service industry technology	15,500	21,500
Management & administration	17,400	24,500

Sources: National Graduates Survey and Follow-up Survey of 1982 Graduates

Three years later, in 1987, the average earnings of the university graduates had risen by 35% to \$34,100. However, differences in pay by field of study and by sex persisted. Graduates from the fine arts and humanities field continued to draw the lowest earnings (\$27,900), and those from the medical and health faculties continued to lead (\$48,300). The pay gap between the two groups had essentially doubled over the three years. Similarly, the earnings differential had doubled between the men (\$37,500) and women (\$30,500).

Earnings of college graduates showed a similar pattern. In 1984, their annual earnings averaged \$18,700. Three years later, the average had risen by the same proportion (35%) as experienced by their university counterparts to \$25,300. In 1984, the average earnings had ranged from a low of \$15,500 for the secretarial science and merchandising graduates to a high of \$22,100 for the health science graduates. By 1987, graduates in electronics, mathematics and computer science had replaced those in health science as leaders in earnings

(\$28,800), but secretarial science graduates maintained their position as the lowest paid workers (\$21,500). Women continued to experience lower earnings than men (\$22,300 vs. \$28,600 in 1987).

The estimated average annual earnings of Canadian workers aged 25-35 years in 1987 was \$24,400.⁷ This was lower than the averages for the 1982 university and college graduates during that same year. Thus, in terms of both employment and earnings performances, the two 1982 graduate cohorts demonstrated that higher education has significant pay-offs.

Self-employment

Five years after graduation, approximately 8% of the university graduates and 5% of their college counterparts were self-employed. These ratios are remarkably high considering the group's brief experience in the labour market and the fact that many – such as the engineers, doctors, accountants and lawyers – could set up shop only after meeting the provincial accreditation requirements (for example, articling, internship, residency). Despite this, the incidence of self-employment among the 1982 graduates compared well with the 11% ratio for all 25-35 year-old Canadian workers in March 1987.

Not surprisingly, the highest incidences of self-employment among the university graduates were found among medicine and health graduates (23%), agriculture and biological science graduates (12%), and commerce, economics and law graduates (12%). It was lowest among the education graduates (3%). Of the college graduates, self-employment was highest among graduates in arts and humanities (15%), natural sciences and primary industries (10%) and mechanical, architectural and construction engineering (8%). It was lowest among the secretarial science and merchandising graduates (3%).

Post-graduation interprovincial mobility

By comparing the home province with the province of residence at the time of the 1984 and 1987 interviews, it is possible to determine the degree and pattern of interprovincial mobility of the 1982 graduates and to provide a profile of the migrants.

Two years after graduation

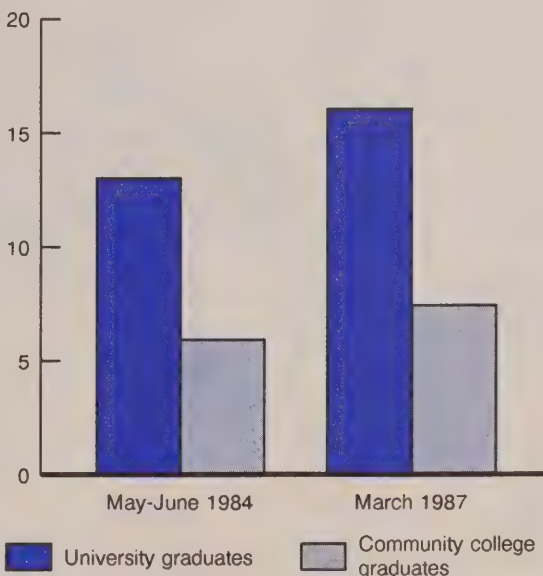
At the time of the May-June 1984 survey, approximately 12.8% of the 1982 university graduates and 5.9% of their college counterparts had settled in a province other than their own. Who were these migrants?

Women were about as likely as men to move from their home province following graduation; they accounted for about 48% of

Inter-provincial mobility of 1982 graduates

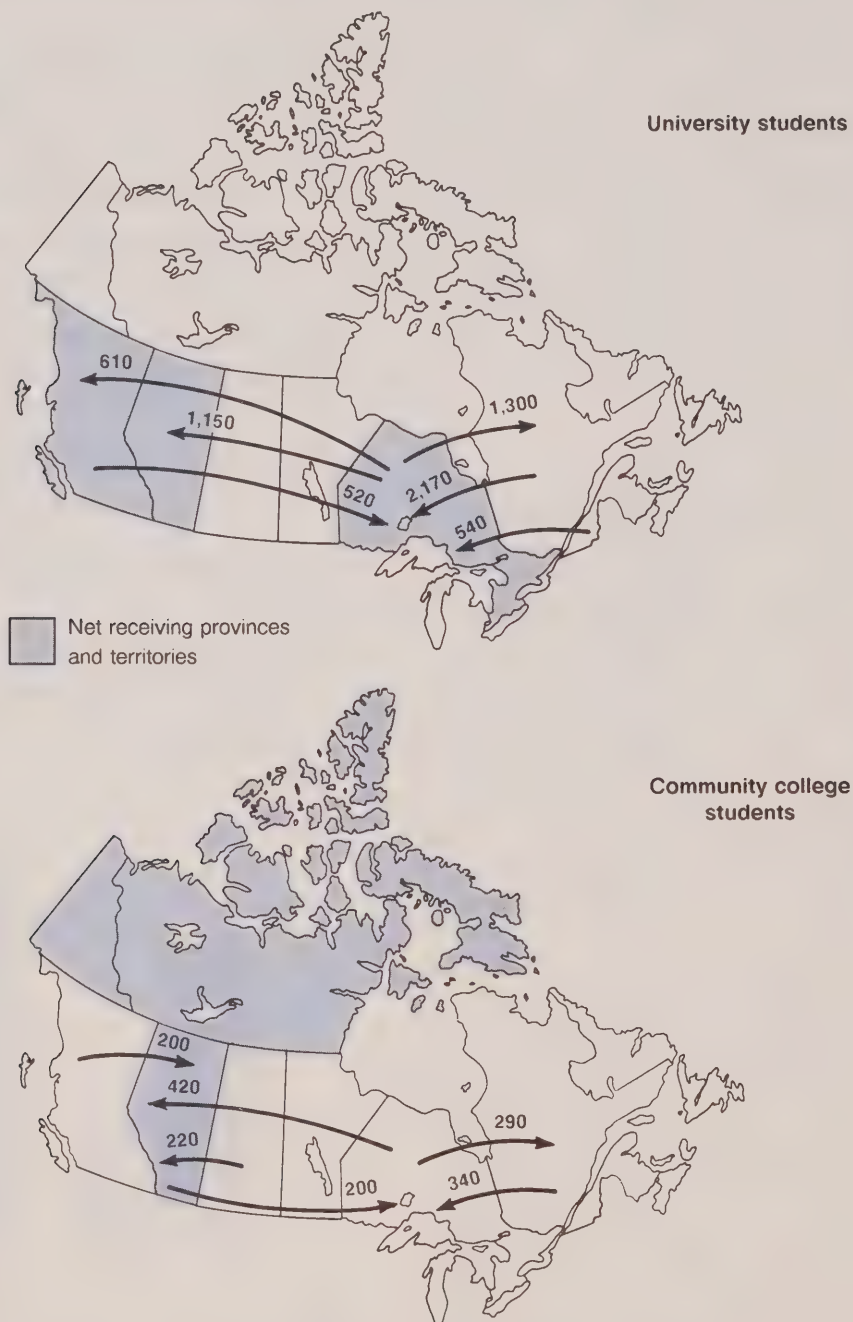
University graduates were twice as likely as their community college counterparts to migrate.

% outside home province



Source: National Graduates Survey and Follow-up of 1982 Graduates

Six largest inter-provincial migration flows: home province versus province of residence in 1987



Source: National Graduates Survey and Follow-up of 1982 Graduates.

the university and 53% of the college graduates who relocated. Among the university graduates, the most likely individuals to move to another province were those who specialized in agricultural and biological sciences, engineering, mathematics and physical science. Of the college graduates, those from the chemical, general, aeronautical and industrial engineering faculties were most likely to do so.

The surveys did not seek reasons for inter-provincial mobility. However, migrants generally experienced lower unemployment rates than those who remained

in their home provinces. Better job prospects might have been an important motivation for moving.

Most provinces lost university graduates to, and received graduates from, other provinces. On balance, however, the movement was westward. Indeed, only Alberta and, to a much lesser extent, British Columbia took in more graduates than they lost (Table 4). These two provinces had been net "exporters" of students for university education. The remaining provinces and territories all "lost" university graduates, the largest losers being Quebec, Manitoba and Saskatchewan.

Table 4
Provincial distribution of 1982 graduations

	Province of residence			
	Before enrolment	While enrolled*	After graduation	
			1984	1987
University graduates	94,400	94,400	94,400	94,400
Newfoundland	1,630	1,480	1,540	1,560
Prince Edward Island	430	260	390	360
Nova Scotia	3,920	4,480	3,650	3,460
New Brunswick	2,370	2,280	2,120	1,980
Quebec	26,630	25,170	25,550	24,860
Ontario	37,720	39,960	37,600	38,480
Manitoba	4,160	4,100	3,660	3,600
Saskatchewan	3,460	3,450	3,140	3,010
Alberta	6,990	6,780	8,400	8,510
British Columbia	6,510	6,390	6,680	6,930
Yukon/N.W.T.	190	0	160	140
Not stated	360	0	1,480	1,480
Community college graduates	53,100	53,100	53,100	53,100
Newfoundland	780	720	710	690
Prince Edward Island	430	520	330	330
Nova Scotia	780	700	720	810
New Brunswick	630	540	630	610
Quebec	14,400	14,190	14,210	14,040
Ontario	24,080	24,710	23,390	23,700
Manitoba	1,380	1,320	1,370	1,360
Saskatchewan	1,200	1,030	1,160	1,120
Alberta	5,410	5,750	5,890	5,910
British Columbia	3,790	3,650	3,700	3,790
Yukon/N.W.T.	60	0	80	100
Not stated	180	0	910	650

Sources: National Graduates Survey and Follow-up Survey of 1982 Graduates

* People living in one province and commuting daily to attend school in another province are included in the province in which the school is located.

Alberta and the territories were the only areas that gained more college graduates than they lost. (Alberta had also been a net receiver of college students into its educational system.) New Brunswick and Manitoba came out even. All the other provinces were net losers – they lost more college graduates than they gained – the largest ones being Ontario, Quebec and Prince Edward Island. Ironically, Ontario and Prince Edward Island, like Alberta, had been "net educating" provinces of these graduates.

Alberta's ability to attract qualified young workers during the period covered by the surveys is not surprising. As noted earlier, the incidence of interprovincial migration was high among engineering, agricultural and primary science students. Alberta's mining, exploration and primary (forestry and related) industries seem to have attracted many of these graduates. Also, the attraction to Alberta partly reflected the delayed timing of the recession in that province.

Five years after graduation

In March 1987, the proportion of the class of '82 residing outside their home provinces had risen to 15.6% for university graduates and 7.4% for college graduates. These migration rates were higher than the interprovincial migration rate of Canadians of similar age during the 1981-1986 period (6.8%).⁸

Women still comprised about half of the university graduate migrants, but formed a slight majority of the community college graduate migrants (56%).

University graduates trained in agricultural and biological sciences, in mathematics and physical sciences, and in engineering continued to have the largest proportion of migrants – about one in five had moved outside their home province at this time. The education graduates were the least likely to migrate – only about one in

ten did. Among the community college graduates, the incidence of migration was still highest among graduates from the chemical, general, aeronautical and industrial engineering faculties (11%), and lowest among the secretarial science and marketing graduates (5%).

By March 1987, the net migration of university graduates into Alberta and British Columbia had increased, and prosperous Ontario had also become a net receiving province, drawing most of its immigrants from Quebec and Atlantic Canada. All the other provinces and the territories were net losers.

Of the community college graduate migrants, Alberta and the territories turned out to be the largest net gainers. Nova Scotia ended up with a marginal net inflow of graduates, and British Columbia and Manitoba came out even. The rest of the provinces lost more graduates than they received.

Conclusion

Data from the two surveys of the 1982 university and community college graduates clearly demonstrate that there are pay-offs to higher education. While differences existed by field of specialization, the class of '82 clearly fared much better, in terms of employment opportunities and earnings, than other workers in the same age group. The high employment/population ratio and the low unemployment rate experience of the group, coupled with the strong match between their fields of study and jobs, also suggest that the education system was in tune with the needs of the labour market. Furthermore, the graduates demonstrated an early sense of entrepreneurship, an important asset in an ever-changing and more competitive economy.

Discussions of Canadian labour markets, especially regarding young Canadian workers, over the past year or so,

appear to be shifting from the subject of unemployment to that of skill shortages and skill development. In this context, the higher-than-average interprovincial mobility rates among highly educated young workers could help reduce some geographical imbalances in the demand for and supply of skilled labour. However, interprovincial migration alone may prove to be an insufficient remedy for skill shortages. Part

of the solution can come from an increased supply of well-educated labour. This, unfortunately, is not without cost. And results from the follow-up surveys of the 1982 graduates show that the net educating provinces of highly qualified workers are not necessarily the provinces where these graduates reside upon completion of their studies. □

Notes

¹ The surveys also covered the 54,900 1982 trade/vocational graduates, but these individuals were excluded from this study for a number of reasons: entrance requirements and course duration for the various fields of study differed greatly; also the data are subject to high sampling variability. Graduates from foreign countries as well as Canadian graduates residing abroad were also excluded for obvious reasons.

² The field of study groupings reported in this study are in line with the questionnaire and data capture design. Commerce graduates comprised 65% of the university commerce, economics and law group; the rest were equally split between economics and law. Similarly, secretarial science college graduates accounted for 68% of their combined group, merchandising and sales (22%) and service industry technology (10%).

³ In 1980, electronics, mathematics and computer science graduates accounted for almost 9% of all community college graduates; by 1982, the proportion had risen to 11%. During the same period, the number of university students graduating with a computer

science bachelor degree rose by 42%. Similarly, the proportion of university women graduating at the bachelor degree level in commerce and business doubled from 4% in 1977 to approximately 8% in 1982.

⁴ About 80% of the 1982 university graduates and 87% of their community college counterparts were between the ages of 20 and 30 at the time of graduation.

⁵ Full-time workers comprised 89% of the employed university graduates in both 1984 and 1987; among the community graduates, the corresponding proportions were 89% and 87%.

⁶ A forthcoming article in this publication seeks answers to these gender-based pay differentials.

⁷ The earnings data for the 25-35 year old Canadian work force come from Statistics Canada's Labour Market Activity Survey (1986), unpublished data.

⁸ Based on results from the 1986 Census of Population.

References

Statistics Canada. *Education in Canada: A Statistical Review for 1977-78* (81-229). Minister of Industry, Trade and Commerce, Ottawa, 1978.

Statistics Canada. *Education in Canada: A Statistical Review for 1984-85* (81-229). Minister of Supply and Services Canada, Ottawa, 1985.

Statistics Canada. "1986 Census of Population: Mobility, Labour Force, Education", *The Daily* (11-001). Ottawa, March 1, 1988.

Clark, W., M. Laing and E. Rechnitzer. *The Class of 82: Summary report on the findings of the 1984 National Survey of the Graduates of 1982* (S2-168-1986E). Minister of Supply and Services Canada, Ottawa, 1986.

Wives as primary breadwinners

Maureen Moore

A few decades ago, most couples included only one earner: the husband. A woman who held a job usually left the labour force when she married or had her first child, becoming economically dependent on her husband. Today, with more and more married women joining the work force, single-earner couples are in the minority. Indeed, two-thirds of couples in 1987 had employment income from both the husband and the wife.

Increasingly, it seems that wives are "outearning" their husbands. By 1987, the wife was the principal breadwinner in 644,000 families, just under one in five of all dual-earner families. What are the work patterns of these women and their husbands? What are their family characteristics? This article addresses these questions and explores the differences in the patterns at various stages of career and life cycle.

Dual earning: the new tradition

To some people, dual earning is an "egalitarian" form of breadwinning. Dual-earner spouses often have similar socio-economic backgrounds. For example, a degree of occupational symmetry has been observed for dual-earner couples (Moore, 1989). Similarly, high-earner wives are likely to have

high-earner husbands. But despite these parallels, most wives still earn less than their husbands.

This earnings difference is explained, in part, by work patterns. Many dual-earner wives must balance their time between work and family. They often do this through part-time work and work interruptions. In 1987, 30% of wives in dual-earner families worked part-time or part-year, compared with only 4% of husbands. And over the course of their careers, women are more than twice as likely as men to take long work interruptions, primarily for family-related reasons (Burch, 1985). Age differences between husbands and wives are also partially responsible for the lower earnings of wives, since for both men and women, earnings tend to increase with age.

On average, husbands in dual-earner families earn twice as much as their wives. In four out of five dual-earner families, they are the principal earners. Wives who are principal breadwinners therefore represent an obvious departure from the norm. Their increasing numbers reflect the growing impact of the wife's earnings on the family's finances. The role of the wife's earnings, it seems, has expanded beyond that of just supplementing or stabilizing family income.

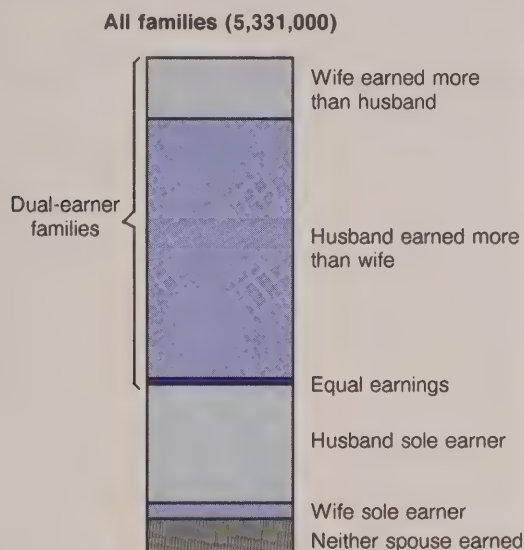
The wives

How do primary-earner wives differ from other working wives? First, educational

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Earning patterns of husbands and wives, 1987

The traditional husband as sole-earner family has shrunk to one-quarter of all families.



Source: Survey of Consumer Finances

credentials and work experience appear to influence whether or not a dual-earner wife will become her family's main income earner. In 1987, primary-earner wives were more likely than secondary-earner wives to have postsecondary education. (Moreover, 40% had a higher level of education than their husbands.) Managerial and professional occupations were also more frequent among primary-earner wives than among other working wives (Table 1).

But the most marked difference between the two groups of wives is work patterns. Three-quarters of wives who were primary earners worked full-time throughout 1987 compared with just under half of the wives who were secondary earners (Table 2). The earnings of primary-earner wives, \$24,700 on average, were almost double those of secondary-earner wives

Data source and definitions

The data were derived from the Survey of Consumer Finances, a Labour Force Survey supplement conducted annually since 1971 (and occasionally between 1951 and 1971). This survey collects information on annual earnings, incomes and work experience for the previous calendar year.

Husband-wife families comprise married and common-law couples, with or without children and other relatives. Elderly husband-wife families, in which both spouses are over 65, have been excluded from this analysis.

Primary-earner wives: Wives who have paid employment are either primary earners, secondary earners, or sole earners. Primary-earner wives are defined as women who, in 1987, earned at least one dollar more than their husbands. Most primary-earner wives earned at least 10% more than their husbands, and a third earned at least twice as much as their husbands.

Primary- and sole-earner wives differ in many respects. Three-quarters of primary-earner wives are of baby-boom age or younger (that is under age 45). Two-thirds of sole-earner wives (a total of 181,000, or 3% of all wives, in 1987), on the other hand, are over 45. Most of their husbands are not in the labour force: in 1987, 57% were retired and 22% were unable to work. Wives who are sole earners are therefore more likely to be easing their families into retirement, rather than working in a more permanent breadwinning arrangement.

Earnings consist of gross dollar income from wages and salaries, and net income from self-employment.

Work experience or work pattern refers to the weeks worked at a job or business, including time spent away from work because of illness, accident, vacation, maternity leave, strikes and lockouts. Full-time work is defined as 30 or more hours per week. A full-year worker is a person who worked at least 49 weeks.

Weeks unemployed are weeks without work in which the person was available and looking for work. Unemployment was coded in stretches of one, two and three or more periods throughout the year. Also recorded was the main activity of respondents who were neither working nor looking for work.

Table 1
Education and occupation of dual-earner wives, 1987

	Primary-earner wives		Secondary-earner wives	
	Total	Husband worked full-time all year	Total	Husband worked full-time all year
	'000			
Total	644	385	2,795	2,390
	%			
Education of wife	100	100	100	100
High school or less	48	44	60	59
Postsecondary – no degree	32	34	27	28
Postsecondary – with degree	20	23	12	13
Occupation of wife	100	100	100	100
Managerial and professional	44	50	26	27
Clerical, sales and service	41	38	51	52
Blue collar*	15	12	23	21

Source: Survey of Consumer Finances

* Blue collar occupations refer to jobs in processing and machining, product fabrication, construction, transportation and farming. Also included is a small proportion (4% for primary-earner wives and 12% for secondary-earner wives) of unspecified occupations.

Table 2
Age and work patterns of dual-earner wives, 1987

	Primary-earner wives		Secondary-earner wives	
	Total	Husband worked full-time all year	Total	Husband worked full-time all year
	'000			
Total	644	385	2,795	2,390
	%			
Age of wife	100	100	100	100
15-24	8	5	8	7
25-34	33	31	34	34
35-44	33	37	32	34
45-54	18	20	19	19
55+*	9	8	6	6
Work pattern of wife	100	100	100	100
Worked full-time all year	74	80	45	48
Worked part-time all year	10	11	18	19
Worked part-year with no unemployment	5	3	16	15
Experienced some unemployment	12	6	21	18

Source: Survey of Consumer Finances

* This group comprises all wives 55 years and over except those in couples in which both spouses are 65 years and over.

(\$12,800), reflecting no doubt the different backgrounds and work experiences of each group.

A comparison of the two groups of working wives also reveals the trade-offs between work and family. In 1987 most dual-earner wives were of childbearing age. But 42% of the primary-earner wives had no children, compared with only 29% of secondary-earner wives (Table 3). The data also suggest a pattern of delayed childbearing. In general, fertility among Canadian women peaks in the late 20s. But only 58% of primary-earner wives aged 25-34 had children, compared with 80% of primary-earner wives aged 35-44. Clearly, there is a tendency among primary-earner wives to postpone childbearing.

The husbands

The fairly sharp differences between primary and secondary-earner wives did not extend to their husbands. Husbands in primary and secondary-earning positions had similar educational profiles, and occupational differences were minor. The age distributions of the two groups of husbands were also a close match. (Most husbands in

dual-earner couples are in the baby-boom cohort and are slightly older than their wives.)

The largest difference between primary and secondary-earner husbands was in work patterns. In 1987, only 60% of secondary-earner husbands worked full-time throughout the year, compared with 85% of primary-earner husbands. By the same token, nearly one-third of all secondary-earner husbands had experienced one or more stretches of unemployment during the year. (Only 20% of wives who were secondary-earners had experienced unemployment.) In 1987, secondary-earner husbands earned on average less than half the income of primary-earner husbands (\$14,800 versus \$34,500).

Impact of the wife's earnings

Wives who are principal breadwinners have above-average earnings, but they still generally earn less than husbands who are primary-earners. Their share of the family's total income is also smaller. The average primary-earner wife contributed 51% of the family's income and her husband contributed 31% with the remainder coming from other family members and from other income sources. In contrast, the average primary-earner husband contributed 63% of the family's income and his wife, 23%.

The proportion of families with the wife as the principal breadwinner drops as the level of family income increases. At lower levels of family income, where the incidence of wives who outearn husbands is relatively high, the wife's earnings appear to be critical to the family's financial well-being. For example, in 1985, only 7% of these families were in low income positions.¹ But without the earnings of the wife this proportion would have been 44%, all other things being equal.

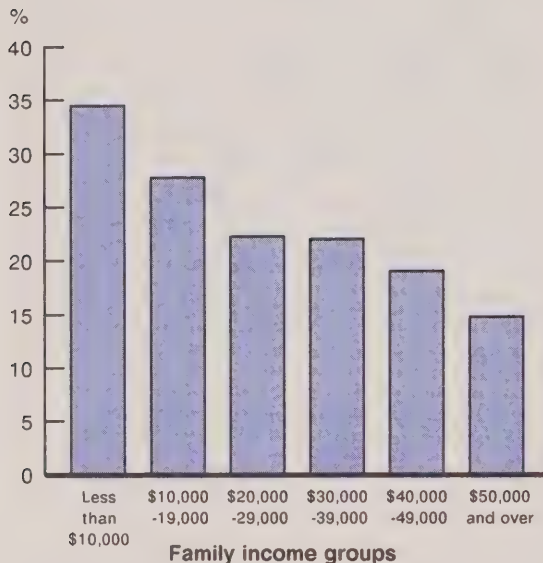
Table 3
Children of dual-earner wives, 1987

	Primary- earner wives	Secondary- earner wives
		'000
Total	644	2,795
		%
Youngest child under age 6	22	27
Youngest child age 6-11	14	18
Youngest child age 12-15	9	11
Youngest child age 16 or over	13	15
No children	42	29

Source: Survey of Consumer Finances

Dual-earner families with the wife as the primary breadwinner, 1987

The proportion of families where the wife is the primary earner declines as total family income rises.



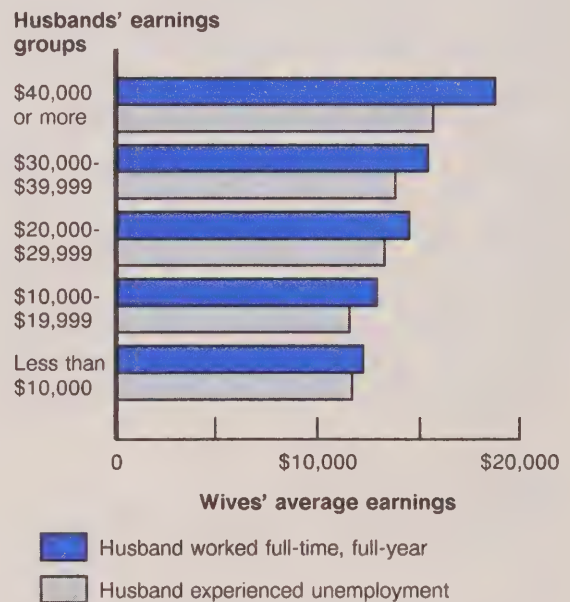
Source: Survey of Consumer Finances

If a wife has high earnings (relative to other wives), there is a good chance that she will earn more than her husband. For example, 53% of all wives earning \$40,000 or more were the main breadwinners in their family. The same is true if the husband has low earnings; the wife was the primary-earner in 65% of all dual-earner couples where the husband earned less than \$10,000. Thus, high earnings by the wife and low earnings by the husband both increase the likelihood that the wife will be the principal breadwinner. But it appears that low earnings on the part of the husband (vis-à-vis all dual-earner husbands) account for the majority of families with the wife as the main breadwinner.²

In fact, wives earning \$40,000 or more per year – an exceptionally high income – account for only 10% of wives who earn more than their husbands. In contrast, husbands making less than \$10,000 account for 40% of all secondary-earner husbands. So there is little evidence of a "role reversal" in the sense of couples that consist of a high-earner woman and a low-earner man.

The earnings of dual-earner spouses, 1987

When a husband's earnings are less than \$10,000, the chances are high that his wife will be the primary earner.



Source: Survey of Consumer Finances

Work patterns of secondary-earner husbands

Some secondary-earner husbands worked only part-time or part-year, but what about those who worked full-time throughout the year? These husbands made up a slight majority (60%) of the families in which

wives were primary earners. Their wives are likely to have consistently higher earnings throughout their working lives (Bianchi, 1983). For these cases, it would seem reasonable to expect that the wife's higher earnings stem from her own earning power rather than from her husband's relatively low earnings. However, the data suggest otherwise: low earnings on the part of the husband seem to be more important, even in families where the husband worked full-time all year.³

Husbands who worked full-time throughout the year and who were secondary earners made, on average, about half as much as full-time, full-year primary-earner husbands. Of the socio-economic variables studied here, occupation is the only one that shows a difference between the two groups of husbands. Just 28% of secondary-earner husbands, compared with 35% of the primary earners, were in

managerial and professional occupations. Other variables not examined here, such as work performance and overtime, might also account for some of the difference.

Wives who outearn husbands who work full-time throughout the year stand out in many ways. They had the highest average earnings (\$27,700) of wives in any earnings relationship (Table 4). They also had the highest proportion with a post-secondary education (57%), the highest proportion in managerial and professional occupations (50%) and the highest proportion working full-time all year (80%).

Three-quarters of the secondary-earner husbands who did not work full-time throughout the year experienced unemployment during 1987. A large proportion of these husbands were concentrated in "blue collar" occupations (such as processing and machining, construction and product fabrication).

Table 4
Earnings of dual-earner husbands and wives, 1987

	Primary-earner wives			Secondary-earner wives	
	Total	Husband worked full-time all year		Total	Husband worked full-time all year
Total*	644	385	'000	2,795	2,390
			%		
Wife's earnings	100	100		100	100
Less than \$10,000	11	7		47	43
\$10,000 - \$19,999	27	22		31	32
\$20,000 - \$29,999	31	32		16	17
\$30,000 - \$39,999	20	25		5	5
\$40,000 or more	10	14		2	2
			\$		
Average earnings	24,700	27,700		12,800	13,600
			%		
Husband's earnings	100	100		100	100
Less than \$10,000	40	24		5	2
\$10,000 - \$19,999	31	33		14	11
\$20,000 - \$29,999	19	27		25	25
\$30,000 - \$39,999	8	12		26	29
\$40,000 or more	3	5		30	34
			\$		
Average earnings	14,800	18,700		34,500	36,900

Source: Survey of Consumer Finances

* Excludes couples in which both spouses are age 65 or more.

Life-cycle variations

Earnings vary at different stages in the life cycle. A wife's chances of earning more than her husband may be greater at stages in life when his earnings tend to be low – in youth, when he may not yet be settled in his job, or later in life, when he may be semi-retired. If the wife's age is used as a measure of the couple's stage in the life cycle, no such pattern emerges among the couples where the husband worked all year.

The expected life-cycle variation does appear, however, among wives whose husbands did not work full-time throughout the year. The incidence of these families is high in the younger age groups (65% among the 15-24 age group and 44% among the 25-34 age group), declines in the middle age groups, and rises again in the oldest working age group, that is the over 55 age group.

In the young age groups, higher relative earnings among wives are explained in part by periods of unemployment among their husbands. Also, earnings and work patterns at young ages can change rapidly. Even if a wife earns more than her husband at this stage of the life cycle, she may not later. In many cases, the husband may not have worked full-time all year because he was in school. The incidence of secondary-earner husbands with more education than their wives – evidence of greater long-term earning potential – is higher in the 25-34 year group than in any other age group.

Among families in the oldest age group, the proportion of wives who are principal earners tends to be low (6%). At this stage in life, primary earning among wives may again be temporary, reflecting a pattern of transition into retirement. The proportion of husbands who worked part-time or only part of the year – an indication of semi-retirement – is highest in this age group (21%).

The middle age groups (35-44 years and 45-54 years) exhibit the most stable work and earnings patterns. Husbands and wives at these ages tend to be established in careers and most have made all their childbearing decisions. Half of all wives in principal-earning positions were at this point in their lives. Full-time, full-year work was the experience of seven in ten husbands of these wives (Table 5). Because of the stability that characterizes this life-cycle stage, it is likely that many of these wives will remain as their family's principal breadwinner. They earned, on average, \$10,000 more than their husbands. Many faced the challenge of balancing work and childrearing.

Conclusion

Wives who are the primary earner in their family have always been few in number because women tend to earn less than men, to be younger than men when they marry, and to marry men of the same or higher socio-economic background. Although the last 20 years have seen changes in these social patterns, it is still fairly uncommon for a wife to earn more than her husband.

Most wives become principal breadwinners because of their husband's relatively low earnings, rather than because of their own relatively high earnings. Lower earnings on the part of the husband often result because he experienced one or more spells of unemployment; some wives would not otherwise have been in higher earning positions. This situation is most common in the early stages of the life cycle, and because work patterns change frequently at this stage, it may not represent a permanent earnings arrangement. At the other end of a couple's working life, a husband may earn less because he retired during the year (and therefore worked only part of the year) or because he is semi-retired.

Table 5
Primary-earner wives and the life cycle, 1987

	Primary-earner wives by age					
	Total	15-24	25-34	35-44	45-54	55+*
	'000					
Work pattern of husband	644	54	213	210	113	55
	%					
Total	100	100	100	100	100	100
Experienced no unemployment						
Worked full-time full-year	60	35	56	67	68	52
Worked part-time full-year	3	3	2	2	4	8
Worked part-year	7	15	7	5	6	13
Experienced unemployment						
Unemployed less than 13 weeks	8	19	9	6	5	4
Unemployed 13-26 weeks	10	14	13	8	7	5
Unemployed 27 or more weeks	12	15	13	12	10	16
Presence of children						
Total	100	100	100	100	100	100
With children	58	20	58	80	54	23
Without children	42	80	42	20	46	77
Education of the wife relative to that of her husband						
Total	100	100	100	100	100	100
Less	22	19	24	21	19	20
Same	38	40	39	36	40	38
More	40	41	37	43	41	42

Source: *Survey of Consumer Finances*

* All wives 55 years and over except those in couples in which both spouses are 65 years and over.

More than half of primary-earner wives outearned husbands who worked full-time throughout the year. Among these women, a high level of educational and occupational achievement was observed. These wives tended to be in the more established middle years of the life cycle, so

that many are likely to outearn their husbands in years to come.

Some wives are clearly in primary-earner positions because of their husband's reduced work time, but the evidence still points toward an emerging trend of primary breadwinning among wives. □

Notes

¹ A family in a low income position is one whose income falls below Statistics Canada's specified low income cut-offs, which are based on the size of the family and the degree of urbanisation.

² To demonstrate this, if we substitute the annual earnings of each primary-earner wife with the overall average for all dual-earner wives, then the number of wives who no longer outearn their husbands indicates how many of these arrangements resulted because of the wife's above average earnings. If primary-earner wives had earned the dual-earner average (\$15,100), then there would have been 271,000 fewer of these arrangements. But if husbands of these wives had earned the dual-earner average (\$30,600), then there

would have been 463,000 fewer of these arrangements. It appears, then, that more wives outearn their husbands because of the relatively low earnings of the husband than because of the relatively high earnings of the wife.

³ If these secondary-earner husbands had earned earnings equal to the average of all dual-earner husbands who worked full-time throughout the year, then there would have been 279,000 fewer of these families. If their wives had earned the dual-earner average in the same category, then there would have been 219,000 fewer families. Thus, the effect of the husband's relatively low earnings is still stronger, even when he worked full-time all year.

References

Bianchi, S.M. "Wives Who Earn More than their Husbands", *Special Demographic Analyses*. U.S. Bureau of the Census, Washington, D.C., 1983.

Burch, T.K. *Family History Survey: Preliminary Findings* (99-955). Statistics Canada, 1985.

Davis, K. "Wives and Work: The Sex Role Revolution and Its Consequences", *Population and Development Review* (Vol. 10, No. 3). The Population Council, Inc., New York, September 1984, pp. 397-417.

Department of Finance. *Quarterly Economic Review*. Ottawa, June 1989.

Harpell, C. *An Analysis of Dual-earner Families in Canada*. Industrial Relations Centre, Queen's University, Kingston, Ont., 1985.

Moore, M. "The Characteristics of Dual-earner Families", *Income Analytic Report* (13-588, No. 3). Statistics Canada, Ottawa, 1989.

Oppenheimer, V.K. *Work and the Family: A Study in Social Demography*. Academic Press, Inc., New York, 1982.

Oppenheimer, V.K. "The Sociology of Women's Economic Role in the Family", *American Sociological Review* (Vol. 42, No. 3). American Sociological Association, Washington, D.C., June 1977, pp. 387-406.

Picot, G. and T. Wannell. "Job Loss and Labour Market Adjustment in the Canadian Economy", *The Labour Force* (71-001). Statistics Canada, Ottawa, March 1987.

Statistics Canada. *Births and Deaths: Vital Statistics* (84-204, Vol. 1). Minister of Supply and Services Canada, Ottawa, 1988.

Time lost: an alternative view of unemployment

Dave Gower

Unemployment can be defined in a variety of ways, and no single measure is ideally suited to all applications. The "official" measure, published monthly by Statistics Canada, is widely accepted because it is relatively simple and suitable for many applications. It also corresponds to international convention and offers historical continuity.

The source of Canada's "official" unemployment rate is the Labour Force Survey (LFS). To obtain the rate, the estimated number of people who are unemployed is divided by the total number in the labour force. (The labour force consists of those who have jobs plus those who are unemployed.)

This rate does not, and was never intended to, give a complete picture of the unemployed population. The LFS actually provides eight alternative unemployment measures, each of which sheds light on different aspects of unemployment. Many other definitions of unemployment can be produced, including user-specified rates.¹

The nine unemployment rates, which have occasionally been the subject of published analyses,² are labelled R1 to R9, with R5 being the official rate. Eight of the nine rates (including the official rate)

concern a selected group of people. For example, some concentrate on full-time workers or heads of families, and others examine the impact of students, discouraged workers or the military. The remaining rate (R8) approaches unemployment from a quite different perspective. Rather than focusing on people, it measures hours lost relative to hours worked.

This article explains how this "hours" rate is calculated, and addresses the question: how does our perception of the labour market change if we measure unemployment based on hours, rather than on people?

Defining unemployment based on hours

All nine measures of unemployment are founded on the somewhat abstract concept of total labour supply. This total supply can be divided into utilized and unutilized portions of the labour force. Employment represents the utilization of labour services while unemployment represents unutilized labour – that is, an excess supply.

The unemployment rate based on hours is calculated by dividing unutilized hours by the sum of hours worked and unutilized hours. Included among the unutilized hours are: the number of hours that would be worked if all unemployed people had jobs; the hours lost by part-time workers who would prefer to have full-time

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Defining R8 (unemployment rate based on hours)

The basic equation for calculating the unemployment rate based on hours can be expressed as follows:

$$\frac{\text{hours lost}}{\text{hours lost} + \text{hours worked}} \times 100$$

Hours lost can be divided into three components:

- Hours lost due to unemployment, consisting of two main subcomponents:
 - Hours lost by all unemployed persons seeking full-time jobs (that is, the number of unemployed seeking full-time jobs multiplied by the average weekly hours worked by persons employed full-time).
 - Hours lost by all unemployed persons seeking part-time jobs (that is, the number of unemployed seeking part-time jobs multiplied by the average weekly hours worked by persons employed part-time).
- Hours lost due to involuntary part-time work:
This covers all persons working part-time because they could not find full-time work. This component is the difference between the hours worked by these people and the average weekly hours of full-time workers.
- Hours lost due to a short week:
This covers all persons who could not work their full scheduled hours during the week because of material shortages or lack of demand. Their lost hours are counted in R8.

For the mathematical equations with numerical examples, see the staff report *Supplementary Measures of Unemployment*. Copies can be obtained by contacting Suzanne David at (613) 951-4627.

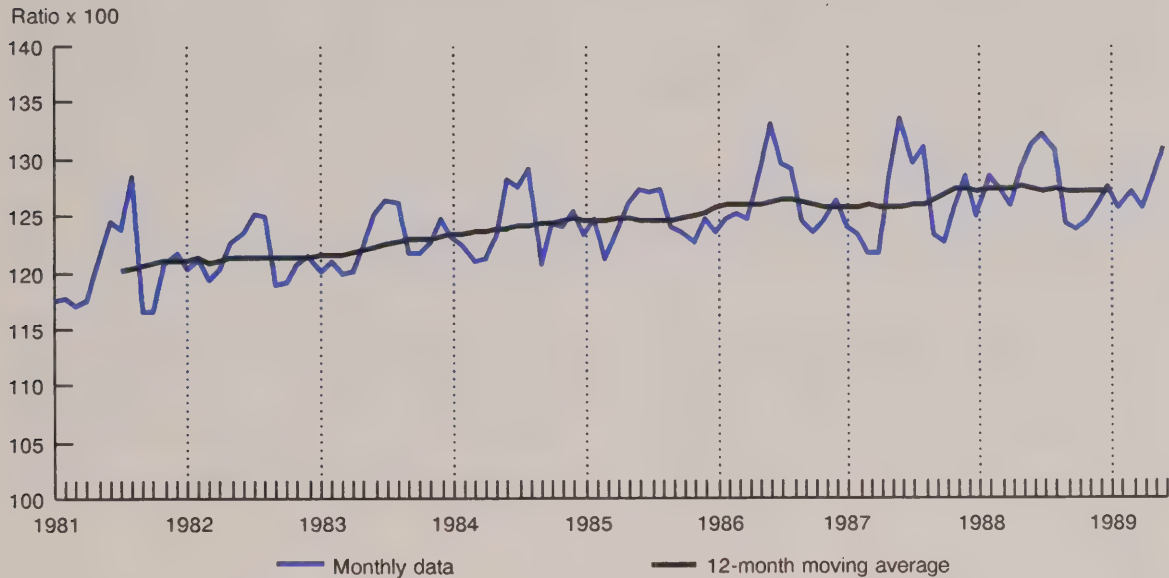
employment ("involuntary part-time"); and the hours lost by people on short work weeks. (See *Defining R8* for more detail.)

What does this measure show that the other measures do not? Primarily, it is a more complete measure of the unutilized labour supply. The official measure and the other measures require that everyone be assigned one and only one classification during the survey's "reference week".³ A person cannot be employed and unemployed in the same week. This means that people who, for example, lose their job and become

unemployed in the middle of this week are counted as employed, not as unemployed. The R8 measure, on the other hand, recognizes that in fact some people have more than one employment status during the week. In addition, the hours measure distinguishes between unemployed people seeking part-time work and those seeking full-time work, assigning a greater value to the latter. In the official rate, the two groups of unemployed are counted on an equal footing.

Ratio of unemployment rate based on hours to the "official" rate

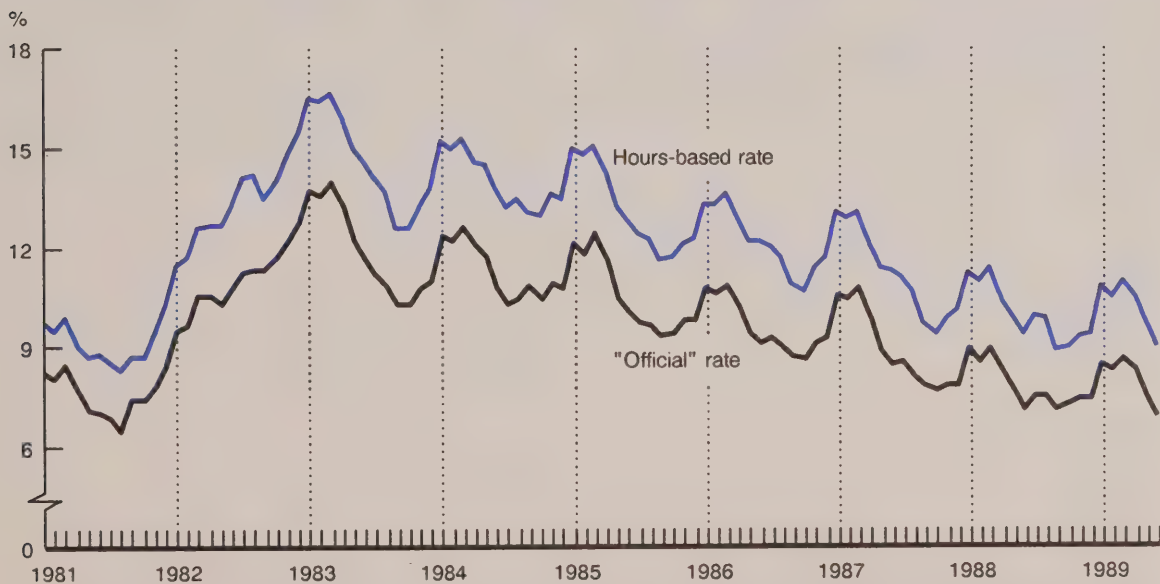
The upward trend in the ratio shows that the gap between the two rates has been gradually increasing.



Source: Labour Force Survey

Unemployment rate based on hours and "official" rate

The two unemployment measures exhibit a similar seasonal pattern.



Source: Labour Force Survey

An analogous measure in the field of economic statistics would be capacity utilization, which is the proportion of potential manufacturing output actually produced by the economy during a given period of time. Unemployment based on hours gives the percentage of the available labour input that the economy does not use to produce goods and services.⁴

Does the unemployment picture change using R8?

An unemployment rate based on hours is somewhat higher than a rate based on people. Furthermore, the gap between the two measures is wider in the summer than in the winter and, since 1981, it has shown a gradual tendency to widen from one year to the next.

Why does the gap between the two unemployment measures fluctuate? An examination of components of the hours measure tells the story. The number of hours lost through involuntary part-time work fluctuates much more than does the number of hours lost due to conventionally measured unemployment, both seasonally and over the years. Therefore, by picking up the hours lost by involuntary part-time workers as a component of unemployment, the hours measure not only shows a higher level but also an extra degree of volatility.

Despite these differences, the two measures show a similar picture of the Canadian economy in the 1980s. For example, the timing and magnitude of the 1981-82 recession remain the same regardless of the measure used.

Table 1
Unemployment rate based on hours and the "official" rate

	1981			1988		
	Hours-based rate	"Official" rate	Ratio*	Hours-based rate	"Official" rate	Ratio*
	%			%		
All ages	9.0	7.5	120	9.9	7.8	127
15-24	16.4	13.2	124	16.2	12.0	135
25-44	7.3	6.2	118	9.0	7.2	125
45-54	5.7	4.7	121	7.4	5.7	130
55+	4.9	4.0	123	7.3	5.6	130
Men						
All ages	7.8	7.0	111	8.5	7.4	115
15-24	16.6	14.1	118	16.3	12.9	126
25-44	5.8	5.3	109	7.4	6.5	114
45-54	4.7	4.2	112	5.5	4.8	115
55+	4.5	4.0	113	6.6	5.6	118
Women						
All ages	10.8	8.3	130	11.6	8.3	140
15-24	16.1	12.3	131	15.9	11.0	145
25-44	9.6	7.5	128	10.9	8.0	136
45-54	7.6	5.5	138	10.1	6.9	146
55+	5.8	4.0	145	8.6	5.6	154

Source: Labour Force Survey

* Unemployment based on hours divided by the "official" unemployment rate, multiplied by 100.

Gap in rates differs by age and sex

The rate based on hours exceeds the official unemployment rate for both men and women (Table 1). But the "gap" between the two rates is wider for women, in relative terms. This is due to the greater frequency of involuntary part-time work among women.

The rate for people under age 25 is also considerably higher if one uses the hours measure of unemployment. This can be seen by looking at the ratio of the hours-based unemployment rate to the "official" unemployment rate. In 1988, this ratio was 135 for people under age 25, compared with 127 for all ages.

In relative terms, the gap between the two rates increased for every age-sex

category between 1981 and 1988, but to different degrees. For example, between these years, the gap widened more for women (from 130 to 140) than for men (from 111 to 115).

Summary

An unemployment definition that measures lost hours can capture some aspects of unemployment not shown by the official unemployment rate. In addition to producing higher rates, the hours measure changes the comparison between different age-sex groups and has greater seasonal movements. However, the basic picture of economic trends over time is similar, regardless of which of the two unemployment measures is used. □

Notes

¹ A number of the alternative unemployment rates are published in *Perspectives on Labour and Income* – see Key Labour and Income Facts. User-specified rates, as well as monthly data for the alternative rates published in *Perspectives*, can be obtained on a special request basis from Household Surveys Division. Contact Hélène Lavoie at (613) 951-2301.

² For example, Jackson (1987) reviewed the full range of alternative rates, explaining the differences between them and examining their performance over time.

³ Results for the Labour Force Survey are based on a "snapshot" of the working-age population in one week of each month. This "reference week" is usually the one containing the 15th day of the month.

⁴ If R8 showed the *utilized* supply of labour as a percentage of the total supply, it could be called an employment rate instead of an unemployment rate, and would be even closer in concept to capacity utilization.

Reference

Jackson, G. "Alternative Concepts and Measures of Unemployment", *The Labour Force* (71-001). Statistics Canada, February 1987, pp. 85-120.

Sources

A potpourri of information: survey news, including special surveys conducted as supplements to the Labour Force Survey; notes on research projects inside and outside Statistics Canada; recent publications and data releases; other items of news and future events.

Survey of Job Opportunities (SJO) suspended

The SJO is a supplement to the Labour Force Survey (LFS) conducted every March since 1979 to identify the number and characteristics of persons who say they want a job although they are not actively seeking one. The SJO will not be repeated this year.

The SJO was launched because of public concern over the exclusion from the unemployment figures of people who are not job-hunting because they believe there is no work available. This survey provided labour market analysts with comprehensive information on these "discouraged workers". The size of this group rises during an economic downturn and falls during an upswing; and so does public interest in the group. Interest was very high in 1983, when the number of discouraged workers peaked at approximately 200,000. Since then, their numbers have declined to around 70,000 – and public interest in the subject has subsided too.

In the present climate, the level of interest in discouraged workers is too low to warrant conducting the survey in 1990.

Thus, the decision to suspend it. However, should developments in the economy and the labour market result in a re-awakening of this interest, the survey will be reinstated.

It should be noted that the suspension of the SJO will not result in a complete absence of information on discouraged workers. Statistics Canada will continue to gather and publish data on this topic through the monthly LFS and the annual Labour Market Activity Survey. (For those interested in a brief discussion of differences between the LFS and SJO definitions of the discouraged worker, see the article by Ernest B. Akyeampong entitled "Discouraged Workers" in the Autumn 1989 issue of this publication.) □

Labour Market Activity Survey – an update

The Labour Market Activity Survey (LMAS) conducted in January 1988 collected information on labour market participation in 1987. The information provided by the respondents was used to compile two separate data files.

Approximately 75% of the respondents interviewed in 1988 had been interviewed one year earlier to collect labour market participation information for 1986. These respondents furnished a second year of data to yield the two-year longitudinal file. In addition to the respondents who were interviewed for a second time, a substantial number of respondents were

interviewed for the first time. Information for a one-year cross-sectional file was also furnished by both sets of respondents; that is, by those interviewed for the first time and by those 1987 survey respondents still living in the same household at the time of the 1988 interview.

The 1986-87 longitudinal file and the 1987 cross-sectional file correspond to somewhat different populations and serve different purposes. For example, a study of labour market activity patterns over a two-year period obviously requires the longitudinal file; on the other hand, a comparison of annual wage distributions for the years 1986 and 1987 should be based on estimates from the cross-sectional file compiled for 1986 and the one for 1987.

The 1986 cross-sectional file has been available for some time. Microdata tapes and supporting documentation for the longitudinal file and the 1987 cross-sectional file became available earlier this year.

In January 1989, the LMAS began a new two-year cycle. This second cycle will produce longitudinal and cross-sectional data based on a completely new sample. The resulting 1988 cross-sectional file was also released early this year.

Further information on this data source may be obtained by contacting Richard Veevers at (613) 951-4617. □

General Social Survey

The demand for a broad range of data on socio-economic trends has led to the introduction of general social surveys in many countries, including Australia, Japan, the Scandinavian nations, the United Kingdom and the United States. In Canada, the response to such gaps in the national statistical information system was the General Social Survey (GSS), first conducted by Statistics Canada in 1985.

The two primary objectives of this survey are: to gather data on social trends in order to monitor changes over time in the living conditions and well-being of Canadians; and to provide information on specific policy issues of current or emerging interest.

Each year, one cycle of the GSS is conducted. The survey content for each cycle consists of three components: classification, core and focus. The classification component comprises basic socio-demographic variables required to delineate population subgroups of interest. Core content, which is intended to meet the first of the survey objectives, is chosen on a rotating basis from five general topic areas: health; time use; personal risk; work and education; and the family. The second survey objective is addressed through focus content, which provides non-recurring information on a specific policy issue or social problem. While core and classification content are funded by Statistics Canada, costs associated with focus content are recovered from sponsors.

The first cycle of the GSS concentrated on health and related lifestyles of the adult population. Core information included short- and long-term disability, well-being, health problems, smoking, alcohol use, physical activity, sleep and use of health care services. Focus questions addressed social support available to the elderly.

Information on time use, social mobility and language was collected for Cycle 2 during the last quarter of 1986. The main purpose of the core questions for this cycle was to identify how various subgroups of the population (for example, students, the unemployed, working mothers, and the elderly) allocate their time. These data are relevant to issues such as: the increased labour force participation of women and the sharing of household tasks and other responsibilities; the amount of time given to

volunteer and other unpaid work in relation to paid work; and how much time Canadians spend in activities with family members versus time spent with others or alone. A secondary set of core questions on the social mobility of Canadians will allow analysts to make intergenerational comparisons of education and occupations. Focus content, sponsored by several federal government departments, comprised questions on language knowledge and use, and language mobility.

In January and February 1988, Cycle 3 interviews were conducted. Core content on personal risk emphasized exposure to accidents and crime, while focus questions, sponsored by the Department of Justice, addressed services to victims of crimes.

Cycle 4 data, collected in January and February 1989, targeted work and education. Three main themes underlie the core content: work and education in the service economy, new technologies and human resources, and emerging trends in education and work. A small module on attitudes to science and technology was also included. (There was no focus content for this cycle.) Cycle 4 is an up-to-date – and in some ways, unique – source of information on many complex issues concerning Canada's present and future labour market. Examples of such questions are:

- To what extent has formal education and the acquisition of educational credentials influenced the labour market experiences and career patterns of Canadians?
- How do Canadians combine paid work, unpaid work (such as keeping house) and educational activity throughout the life cycle? What are the main patterns?
- Are workers satisfied with their jobs? How do they evaluate their jobs with

respect to remuneration, level of responsibility, promotional opportunities, skill and education requirements, and the impact of computers and automated technology?

- Is there evidence that trends in service sector employment are contributing to a decline of the "middle class"? Are work content and its rewards undergoing a polarization into "good jobs" and "bad jobs"?

Cycle 5, with data collection scheduled for early 1990, completes the first round of GSS core topics. Questions concentrate on the respondent's family and friends, and the relationships and interactions with them. The content draws heavily on the 1984 Family History Survey questions on birth, marriage and cohabitation, as well as on the social support questions from GSS Cycle 1.

GSS data are available in several forms. So far, results from Cycles 1 to 3 have been released; Cycle 4 data will be released by early 1990. Public use microdata files for Cycles 1 to 4 (on 9-track tape, tape cartridge or microcomputer diskettes) will also be available by the spring of 1990 and may be purchased with supporting documentation. Special request tabulations and analysis are provided on a cost recovery basis. In addition, the *GSS Analysis Series* is underway. The objective of this new series is to present national and some regional summary data, as well as initial analyses and findings. The first report, *Health and Social Support, 1985* (Catalogue 11-612, No. 1), is based on Cycle 1; analyses based on subsequent cycles will be published in 1990.

For more information, contact Doug Norris, GSS Program Manager at (613) 951-2572; Ed Praught (Cycles 1, 3 and 5) at (613) 951-9180; or Ghislaine Villeneuve (Cycles 2 and 4) at (613) 951-4995. □

Statistics Canada's low income measures

Social policy, for at least the last 25 years, has placed considerable emphasis on poverty issues – whether it be to promote, as an explicit government goal, the elimination of poverty, or to evaluate government programs in terms of their impact on the less advantaged in Canadian society.

In parallel, statistics on the low income population were developed for analytic and monitoring purposes. (These were derived mainly from the annual Survey of Consumer Finances and the Census.) For example, estimates of the incidence of low income among various population subgroups are given in Indicator No. 44 in the *Key Labour and Income Facts* section of each issue of this publication.

In the last issue of *Perspectives*, readers were told about the Statistics Canada review of its low income measures. Written contributions from those who read the discussion paper, *Statistics Canada's Low Income Cut-offs: Methodological Concerns and Possibilities*, are gratefully acknowledged.

At the time of writing, the results of the review were not known. If the form of future published low income statistics is changed, readers will be advised in forthcoming issues of *Perspectives*. □

1986 Focus on Canada Series

The 1986 Census of Canada provided a rich source of information on individual, family and household characteristics of Canadians. It has a lot to offer to researchers in academic, business, cultural, social and governmental organizations interested in undertaking in-depth analyses of social issues.

The Focus on Canada Series addresses current issues using 1986 Census information in a straightforward and very readable way. Four of the 16 publications in the series concentrate on labour and income topics.

Work Women Do (98-125)

This report studies female workers, examining occupation, work activity, class of worker and income. Using supplementary data from related surveys, the characteristics of those who are unemployed and those who have left the labour force or who never joined it are also analyzed. The report shows that:

- In 1986, 56% of all Canadian women were in the labour force. The participation rate for women who have never married was higher than that of married women (65% versus 57%).
- Among women with only pre-school age children, those who were lone-parents had a slightly lower participation rate than those who had husbands living at home (59% compared to 62%).
- Approximately 1.7 million women with children at home were not in the labour force. Only 19% had never been employed and of these women who had never held paying jobs, 57% were 45 years or over.
- Women's share of managerial employment increased from 16% in 1971 to 32% in 1986. But the concentration of women in clerical, sales, and service occupations rose as well, from 55% to 58%.
- Average earnings of women who worked full-year, full-time in 1985 were \$19,995; while this is just 66% of the comparable figure for men, it is an increase over the 1971 ratio of 60%.

Family Income (98-128)

This study examines changes in family income between 1980 and 1985 (in terms of 1985 dollars) by family structure, life cycle, work activity and major source of income. The composition of various income classes and the sources of total income are briefly analyzed. The study highlights the relative position of the provinces and territories. Some of the important findings are:

- Average family income in 1985, at \$37,827, was 1.2% below the 1980 level, after adjustment for inflation. With declining average family size, however, income per family member increased by 2.3% between 1980 and 1985.
- Elderly families gained about 5% in average income. Younger families did not fare as well. Families with a husband or lone-parent aged 15-24 lost 16% in average income between 1980 and 1985; those with a husband or lone-parent aged 25-34 lost 12%.
- Families with both spouses working maintained their income level between 1980 and 1985, but the income position of one-earner families and of lone-parent families worsened. Average income of female lone-parent families in 1985 was 51% of the overall average family income.
- The incidence of low income in 1985 was highest among female lone-parents, at 45%, and lowest among the elderly, at 8%. On the whole, the incidence was twice as high among families with children than among families without children.
- In one-half of all provinces and territories, average family income in constant (1985) dollars increased between 1980 and 1985, while it decreased in the other

half. The largest increase occurred in the Northwest Territories (7%), followed by Nova Scotia (5%). The largest decline occurred in the Yukon (12%), followed by British Columbia (10%).

Employment Income (98-129)

This study highlights the major differences in the 1985 employment income of various population groups. Average employment income for men and women is examined by age, marital status, education, work activity and occupation. Brief provincial comparisons are featured. The report also presents a short analysis of changes in employment income between 1980 and 1985. The results of the study show that:

- In 1985, employment income constituted 79% of all income. Average employment income for all workers was \$18,910; full-year, full-time workers earned on average \$26,781.
- Women's employment income averaged 56% that of men's; among full-year, full-time workers, the ratio was 66%.
- Employment income rises with age, peaking between the ages of 40 and 44 years and declining thereafter. At all ages, women tend to earn less than men.
- There are marked regional differences in 1985 employment income: from averages of \$13,131 in Prince Edward Island and \$13,954 in Newfoundland to \$19,864 in Ontario and \$20,392 in the Northwest Territories. The disparity is somewhat smaller when comparisons are restricted to full-year, full-time workers.
- After adjustment for inflation, average employment income increased substantially between 1970 and 1980, but declined between 1980 and 1985.

During the latter time period, average employment income increased by 3% for women, but decreased by 4% for men.

Trends in Occupation and Industry (98-135)

This study presents the industry-occupation employment structure revealed by the 1986 Census. It also analyzes trends from 1971 to 1986, including changes in the occupational and industrial distribution of the labour force. Highlights from the report include the following:

- In 1986, two-thirds of all workers were in the service-producing industries; less than one-quarter were in the manufacturing and construction industries; and the remainder were employed in the primary industries (agriculture, fishing, trapping, forestry and mining).
- Clerical, sales and service occupations accounted for 40% of all workers; two other occupational groups, the managerial and professional group, and the processing and fabricating group, each comprised about one-quarter of all workers.
- In 1986, women represented nearly 43% of the experienced labour force. However, they were concentrated in only a few types of jobs, such as teaching, nursing, office-related jobs and retail sales positions.
- The industries with the highest growth rates over the period 1971 to 1986 were commercial, consumer and social services. Among occupations, the managerial and administrative and the professional groups grew at the fastest rates.
- Three metropolitan areas - Montreal, Toronto and Vancouver - account for one-third of Canadian employment. Toronto accounts for 16% of employment in service industries in Canada. □

How to order

These publications are available for \$10.00 each. Send orders to: Publication Sales, Statistics Canada, Ottawa, Ontario, K1A 0T6. For faster service, call toll free 1-800-267-6677 for a credit card order; or order by FAX, at 1-613-951-1584.

Institut de recherche et d'information sur la rémunération

One of the responsibilities of the Institut de recherche et d'information sur la rémunération (I.R.I.R.) is to compare the compensation of employees in the public sector with that of other employees in Quebec. For this research, the public sector comprises the provincial civil service and quasi-public organizations such as school boards, colleges and health and social services. The business sector, Quebec state corporations, federal crown corporations, federal and municipal governments and universities constitute the other group of employees.

Since 1986, the I.R.I.R. has published these compensation studies in an annual report, issued late in the year. Updates have been published in May for the last two years.

The November 1989 report, *Cinquième rapport sur les constatations de l'I.R.I.R.*, presents findings on salaries, benefits and working conditions based on the latest available statistics. Compensation comparisons between the public and para-public sectors and other employees were conducted using 74 benchmark jobs which have counterparts outside the public sector. The report also examines major economic and labour market indicators and provides salary scale projections for the province of Quebec. Salary trends in unionized and non-unionized labour markets are analyzed as well.

To obtain a copy of the most recent report, contact Nicole P. Gendreau, Director of Research, Institut de recherche et d'information sur la rémunération, 500 Sherbrooke Street West, Suite 1220, Montréal, Quebec, H3A 3C6, or call (514) 288-1394. □

Report on the British Columbia Open Shop Construction Industry

The Independent Contractors and Businesses Association (ICBA) of British Columbia has published a report based on a 1988 survey of open shop construction firms

in the province. *Replacing Fiction with Fact: Book II, A Report on the British Columbia Open Shop Construction Industry* updates and expands a 1986 study by the ICBA. The report presents findings related to the location, type and volume of projects; wage levels and types of benefits paid; and employment levels of tradespeople, apprentices and designated groups identified by the Employment Equity Act.

For further information contact Philip Hochstein, Executive Vice-President, Independent Contractors and Businesses Association of British Columbia, 5365 Kingsway, Burnaby, British Columbia, V5H 2G1. □

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Perspectives on Labour and Income

The quarterly for labour market information

Key labour and income facts

The following selection of labour and income indicators is drawn from 11 sources and includes published and unpublished annual data. The first 53 indicators appear in every issue and the remainder address a different topic each time.

The latest available annual data are always shown; as results become available, the indicators are updated so that every issue contains new data. An indicator updated since the last issue is "flagged" with an asterisk.

Data sources

The indicators are derived from the following sources:

- | | |
|----------------------|--|
| 1-11 & 15 | Labour Force Survey
Frequency: Monthly
Contact: Ken Bennett (613) 951-4720 |
| 12-14 | Labour Market Activity Survey
Frequency: Annual
Contact: Richard Veevers (613) 951-4617 |
| 16 | Absence from Work Survey
Frequency: Annual
Contact: Denis Lefebvre (613) 951-4600 |
| 17 | Workers' Compensation Statistics
Frequency: Annual
Contact: Joanne Proulx (613) 951-4040 |
| 18 | Help-wanted Index
Frequency: Monthly
Contact: André Picard (613) 951-4045 |
| 19-21 | Unemployment Insurance Statistics
Frequency: Monthly
Contact: André Picard (613) 951-4045 |

- | | |
|--------------|---|
| 22-29 | Survey of Employment, Payrolls and Hours
Frequency: Monthly
Contact: Howard Krebs (613) 951-4063 |
| 30-32 | Labour Canada, Major Wage Settlements
Frequency: Quarterly
Contact: Gilles Léger (819) 953-4234 |
| 33-35 | Labour Income (Revenue Canada Taxation-based statistics, Survey of Employment, Payrolls and Hours and other surveys)
Frequency: Quarterly
Contact: Ed Bunko (613) 951-4048 |
| 36-46 | Survey of Consumer Finances
Frequency: Annual
Contact: Kevin Bishop (613) 951-2211 |
| 47-53 | Household Facilities and Equipment Survey
Frequency: Annual
Contact: Penny Barclay (613) 951-4634 |
| 54-55 | Labour Force Survey
Frequency: Monthly
Contact: Henry Pold (613) 951-4608 |

Notes on the method of deriving certain indicators are given at the end of the table.

Additional data

The table provides at most two years of data for each indicator. A longer time series (generally 10 years) for this set of indicators can be obtained on request on paper or diskette at a cost of \$50. (A more extensive explanation of the indicators is also available.) This 10-year data set will be updated annually in April. Contact: Suzanne David (613) 951-4627.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Labour Market							
*1 Labour force	'000	1988	13,275	231	62	408	318
		1989	13,503	238	63	414	325
Change	%		1.7	3.2	2.6	1.4	2.1
*2 Participation rate	%	1988	66.7	54.6	64.0	60.8	58.8
		1989	67.0	55.7	65.0	61.2	59.5
*3 Employed	'000	1988	12,245	193	54	366	280
		1989	12,486	201	54	373	284
Change	%		2.0	4.0	-	1.8	1.6
*4 Proportion of employed working part-time	%	1988	15.4	11.2	15.0	15.5	15.4
		1989	15.1	11.5	15.7	16.0	14.9
*5 Proportion of part-timers wanting full-time work	%	1988	23.7	58.8	34.5	35.5	36.4
		1989	22.2	55.1	36.1	31.5	37.5
*6 Unemployed	'000	1988	1,031	38	8	42	38
		1989	1,018	38	9	41	41
Change	%		-1.3	-	11.4	-1.8	6.1
*7 Official unemployment rate	%	1988	7.8	16.4	13.0	10.2	12.0
		1989	7.5	15.8	14.1	9.9	12.5
Alternative Measures of Unemployment							
*8 Unemployed 14 or more weeks as a proportion of the labour force	%	1988	3.1	7.7	5.2	4.2	4.8
		1989	2.9	6.8	5.3	3.8	4.9
*9 Unemployment rate:							
- of persons heading families with children under age 16	%	1988	6.9	15.8	13.7	9.6	11.2
		1989	6.8	15.6	14.2	9.2	11.8
- excluding full-time students	%	1988	7.6	16.6	13.4	10.0	11.9
		1989	7.4	15.8	14.6	9.8	12.4
- including full-time members of the Canadian Armed Forces	%	1988	7.7	16.4	12.8	9.9	11.8
		1989	7.5	15.7	13.9	9.6	12.3
- of the full-time labour force	%	1988	9.4	19.3	16.0	12.7	14.6
		1989	9.0	18.6	17.4	12.1	15.0
- of the part-time labour force	%	1988	9.8	17.1	7.2	12.8	13.2
		1989	9.7	15.8	8.2	12.3	14.4
- including persons on the margins of the labour force	%	1988	8.5	20.2	15.0	11.1	14.0
		1989	8.2	18.9	16.1	10.8	14.1
*10 Underutilization rate based on hours lost through unemployment and underemployment	%	1988	9.9	20.1	16.5	13.4	15.2
		1989	9.5	19.3	17.8	12.8	15.6
*11 Proportion unemployed 6 months or longer	%	1988	20.2	23.9	16.2	21.0	19.9
		1989	20.1	21.3	14.1	18.0	19.2

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
3,311	5,118	535	488	1,290	1,514	..	..	1988	'000	1
3,343	5,214	538	482	1,308	1,578	..	..	1989		
0.9	1.9	0.6	-1.1	1.4	4.2	..	..		%
64.0	69.6	66.7	66.4	72.4	65.7	..	..	1988	%	2
64.0	69.8	67.0	66.2	72.4	66.8	..	..	1989		
3,001	4,862	494	451	1,187	1,358	..	..	1988	'000	3
3,031	4,949	498	446	1,214	1,435	..	..	1989		
1.0	1.8	0.9	-1.1	2.3	5.7	..	..		%
13.6	15.6	16.9	17.1	15.5	17.9	..	..	1988	%	4
13.5	15.5	17.2	16.6	15.3	16.2	..	..	1989		
32.6	15.3	21.7	26.5	20.4	28.6	..	..	1988	%	5
31.8	13.5	21.9	27.9	19.3	25.8	..	..	1989		
311	256	42	37	103	157	..	..	1988	'000	6
311	264	41	36	94	144	..	..	1989		
-	3.2	-2.5	-2.1	-8.9	-8.3	..	..		%
9.4	5.0	7.8	7.5	8.0	10.3	..	..	1988	%	7
9.3	5.1	7.5	7.4	7.2	9.1	..	..	1989		
4.4	1.5	2.9	3.1	3.0	4.4	..	..	1988	%	8
4.3	1.5	3.0	3.1	2.5	3.6	..	..	1989		
										9
8.1	4.4	6.2	6.5	7.3	9.4	..	..	1988	%	
7.8	4.7	6.0	7.4	6.5	8.3	..	..	1989		
9.3	4.7	7.5	7.4	7.8	10.3	..	..	1988	%	
9.3	4.9	7.3	7.3	7.0	8.9	..	..	1989		
9.4	5.0	7.7	7.5	7.9	10.3	..	..	1988	%	
9.3	5.0	7.5	7.4	7.1	9.0	..	..	1989		
11.5	5.8	9.2	9.6	9.2	12.8	..	..	1988	%	
11.3	5.8	9.2	9.6	8.3	10.8	..	..	1989		
10.6	8.2	10.9	9.4	11.2	11.2	..	..	1988	%	
10.7	8.0	9.8	9.7	9.9	12.3	..	..	1989		
10.6	5.3	8.3	8.0	8.3	10.8	..	..	1988	%	
10.5	5.3	8.0	8.0	7.5	9.5	..	..	1989		
11.9	6.3	9.9	10.2	9.8	13.3	..	..	1988	%	10
11.7	6.2	9.7	10.2	8.9	11.3	..	..	1989		
25.7	12.7	16.6	20.8	19.0	22.0	..	..	1988	%	11
27.0	13.2	20.6	20.4	17.4	20.6	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Other Labour Market Indicators								
12	Employed at some time in the year, male, age 16 to 69	'000	1986	7,560	151	36	235	191
	– as proportion of male population age 16 to 69	%		87.4	80.7	87.8	82.7	82.0
	Employed at some time in the year, female, age 16 to 69	'000	1986	5,987	109	29	187	149
	– as proportion of female population age 16 to 69	%		67.4	58.0	69.0	62.1	61.8
13	Unemployed at some time in the year, male, age 16 to 69	'000	1986	1,601	63	11	63	56
	– as proportion of male population age 16 to 69	%		18.5	33.7	26.8	22.2	24.0
	Unemployed at some time in the year, female, age 16 to 69	'000	1986	1,441	45	9	58	46
	– as proportion of female population age 16 to 69	%		16.2	23.9	21.4	19.3	19.1
14	Full-time, full-year male paid workers	'000	1986	4,039	53	14	117	90
	Full-time, full-year female paid workers	'000	1986	2,468	35	10	71	53
*15	Days lost per full-time worker per year through illness or for personal reasons	days	1988	9.2	9.1	6.7	8.6	8.7
			1989	9.4	9.6	8.1	8.6	9.6
16	Proportion of paid workers absent two or more consecutive weeks because of illness or accident	%	1987	6.3	4.4	5.1	6.1	6.4
			1988	6.4	5.1	5.7	4.7	6.0
*17	Workers receiving workers' compensation for time-loss injuries	'000	1987	603	9	2	12	11
	Change	%	1988	618	10	2	11	12
				2.6	11.3	17.7	-4.4	11.0
18	Help-wanted index (1981 = 100)		1987	135	156			
			1988	149	180			
Unemployment Insurance								
*19	Total beneficiaries	'000	1987	1,033	68	13	51	57
	Change	%	1988	1,015	71	13	50	57
				-1.8	5.2	0.7	-2.0	0.9
*20	Total beneficiaries as a proportion of contributors	%	1986	9.0	29.3	23.0	13.7	18.7
			1987	8.2	28.4	22.0	13.0	17.9
*21	Regular beneficiaries without reported earnings	'000	1987	800	55	10	40	46
	Change	%	1988	780	58	10	38	47
				-2.5	5.2	0.1	-2.8	1.6

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
1,928	2,850	306	289	733	843	1986	'000	12
84.5	90.0	89.0	90.0	90.4	85.6	..	..		%
1,434	2,331	256	229	601	661	1986	'000	
60.6	71.4	72.1	71.6	74.9	65.8	..	..		%
459	457	58	50	167	217	1986	'000	13
20.1	14.4	13.8	13.7	17.3	19.1	..	..		%
377	482	49	44	139	192	1986	'000	
15.9	14.8	13.8	13.7	17.3	19.1	..	..		%
1,013	1,682	154	130	370	416	1986	'000	14
632	998	109	80	237	242	..	..	1986	'000
9.5	9.7	9.7	7.5	8.3	7.7	1988	days	15
10.2	9.6	8.8	8.6	8.2	8.4	..	..	1989	
7.4	6.1	6.0	4.0	5.9	6.2	1987	%	16
8.1	6.2	6.2	5.2	5.5	5.5	..	..	1988	
217	205	23	16	41	66	..	1	1987	'000	17
218	208	23	15	43	73	..	1	1988		
0.6	1.6	0.5	-5.3	5.1	10.9	..	19.0		%	
155	167	69			79	1987		18
172	180	82			96	..	..	1988	
316	231	33	29	90	142	2	2	1987	'000	19
323	216	35	29	78	139	2	2	1988		
2.2	-6.4	3.7	0.2	-12.9	-2.3	-2.9	-10.8		%	
11.3	5.4	7.0	7.8	8.1	11.0	11.0	4.9	1986	%	20
10.2	4.6	6.8	7.8	7.7	10.6	10.5	5.4	1987		
252	166	25	22	70	111	1	1	1987	'000	21
259	151	26	22	60	106	1	1	1988		
2.5	-9.0	3.2	-1.1	-14.1	-3.9	-3.8	-13.6		%	

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Earnings (including overtime) and Hours								
22	Average weekly earnings in current dollars	\$	1987	442.74	423.64	362.07	400.02	407.39
			1988	463.80	443.99	379.26	417.92	421.15
	Change	%		4.8	4.8	4.7	4.5	3.4
23	Average weekly earnings in 1981 dollars	\$	1987	320.36	313.34	275.34	295.22	298.89
			1988	322.53	320.57	278.05	298.09	298.26
	Change	%		0.7	2.3	1.0	1.0	-0.2
24	Average weekly earnings of salaried employees in current dollars	\$	1987	542.06	497.27	460.15	497.27	500.92
			1988	568.10	524.26	493.20	516.66	523.26
	Change	%		4.8	5.4	7.2	3.9	4.5
25	Average weekly earnings of salaried employees in 1981 dollars	\$	1987	392.23	367.80	349.92	366.99	367.51
			1988	395.06	378.53	361.58	368.52	370.58
	Change	%		0.7	2.9	3.3	0.4	0.8
26	Average weekly earnings of hourly paid employees in current dollars	\$	1987	353.34	338.48	240.59	315.52	331.19
			1988	370.45	353.66	256.22	330.64	342.13
	Change	%		4.8	4.5	6.5	4.8	3.3
27	Average weekly earnings of hourly paid employees in 1981 dollars	\$	1987	255.67	250.36	182.96	232.86	242.99
			1988	257.61	255.35	187.84	235.83	242.30
	Change	%		0.8	2.0	2.7	1.3	-0.3
28	Average weekly hours of hourly paid employees	hrs	1987	32.0	35.2	32.2	32.8	33.8
			1988	32.1	35.5	32.6	33.0	34.0
29	Average weekly overtime hours of hourly paid employees	hrs	1987	1.1	1.4	0.4	0.7	0.8
			1988	1.1	1.7	0.5	0.7	0.9
Major Wage Settlements								
*30	Number of agreements		1988	542	8	2	9	12
*31	Number of employees	'000	1988	1,192	22	5	7	14
*32	Increase in base rate on annual basis	%	1988	4.3	4.1	4.8	4.9	4.1
Labour Income								
33	Labour income in current dollars	\$ million	1987	296.0	3.9	0.9	7.3	5.7
			1988	322.7	4.2	0.9	7.9	6.1
	Change	%		9.0	8.0	8.4	7.6	7.7
34	Labour income per employee in current dollars	\$	1987	28,500	24,700	20,200	23,800	23,600
			1988	30,100	24,800	21,200	24,500	24,600
	Change	%		5.5	0.6	4.9	2.9	4.1
35	Labour income per employee in 1981 dollars	\$	1987	20,600	18,300	15,400	17,600	17,300
			1988	20,900	17,900	15,600	17,500	17,400
	Change	%		1.4	-1.8	1.1	-0.7	0.5
36	Net income from self-employment as a proportion of money income	%	1986	6.0	5.7	8.6	6.2	5.4
			1987	6.7	4.9	12.4	6.6	4.3

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
430.88	456.35	407.85	406.00	450.28	453.42	513.29	609.53	1987	\$	22
454.01	482.68	422.05	411.30	462.76	466.52	556.24	621.17	1988		
5.4	5.8	3.5	1.3	2.8	2.9	8.4	1.9		%	
308.21	324.11	299.01	300.96	338.30	342.20	..	..	1987	\$	23
313.11	327.46	297.01	291.91	338.27	339.78	..	..	1988		
1.6	1.0	-0.7	-3.0	-	-0.7	..	..		%
515.73	563.40	509.43	523.70	564.86	544.62	599.58	692.29	1987	\$	24
540.82	595.71	536.17	527.58	585.04	564.90	666.78	695.96	1988		
4.9	5.7	5.2	0.7	3.6	3.7	11.2	0.5		%	
368.91	400.14	373.48	388.21	424.39	411.03	..	..	1987	\$	25
372.98	404.15	377.32	374.44	427.66	411.43	..	..	1988		
1.1	1.0	1.0	-3.5	0.8	0.1	..	..		%
352.68	365.11	312.89	295.96	327.68	374.10	405.32	484.96	1987	\$	26
372.12	384.77	321.24	301.31	340.60	390.19	437.86	521.54	1988		
5.5	5.4	2.7	1.8	3.9	4.3	8.0	7.5		%	
252.27	259.31	229.39	219.39	246.19	282.34	..	..	1987	\$	27
256.63	261.04	226.07	213.85	248.98	284.19	..	..	1988		
1.7	0.7	-1.4	-2.5	1.1	0.7	..	..		%
32.9	32.4	31.1	28.8	30.4	30.0	31.8	33.7	1987	hrs	28
32.8	32.5	30.7	28.7	30.8	30.2	32.9	33.3	1988		
0.9	1.2	0.9	0.7	1.2	0.8	2.8	3.6	1987	hrs	29
1.0	1.3	0.8	0.8	1.4	0.9	2.8	4.9	1988		
70	187	38	16	60	66	..	..	1988		30
204	323	66	62	132	144	..	..	1988	'000	31
4.3	5.3	3.7	2.8	3.1	5.2	..	..	1988	%	32
72.9	126.4	10.8	8.2	27.0	31.8	1.1		1987	\$ million	33
79.5	139.0	11.5	8.6	29.3	34.5	1.2		1988		
9.2	10.0	6.5	4.5	8.2	8.4	9.1			%	
28,300	30,200	26,100	24,200	27,300	28,100	..	..	1987	\$	34
29,900	32,100	27,500	24,800	28,900	29,100	..	..	1988		
5.8	6.3	5.5	5.8	5.8	3.6	..	..		%
20,200	21,500	19,100	17,900	20,500	21,200	..	..	1987	\$	35
20,600	21,800	19,400	17,600	21,100	21,200	..	..	1988		
2.0	1.5	1.3	-1.6	3.0	-	..	..		%
5.2	5.7	6.9	12.3	5.7	6.6	..	..	1986	%	36
5.8	6.2	7.6	13.4	7.9	7.3	..	..	1987		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Earnings of Full-time, Full-year Workers								
37	Average earnings of men working full-time, full-year	\$	1986	30,200	25,500	24,100	28,700	27,000
			1987	31,900	27,800	25,200	30,300	27,600
	Change	%		5.6	8.8	4.8	5.8	2.3
38	Average earnings of women working full-time, full-year	\$	1986	19,900	16,800	17,200	18,100	17,400
			1987	21,000	17,900	17,900	18,500	18,100
	Change	%		5.8	6.2	3.9	2.3	4.3
39	Ratio of female to male earnings	%	1986	65.8	66.1	71.7	63.1	64.3
			1987	65.9	64.5	71.1	61.0	65.6
Family Income								
40	Average family income	\$	1986	41,200	30,400	32,000	35,400	33,300
			1987	43,600	33,700	34,800	38,100	35,200
41	Median family income	\$	1986	36,900	26,400	28,100	30,700	30,200
			1987	38,900	29,800	30,900	34,300	31,800
42	Average income of unattached individuals	\$	1986	17,600	12,100	13,200	15,400	15,100
			1987	18,700	14,600	13,800	15,900	13,700
43	Median income of unattached individuals	\$	1986	13,300	9,200	9,500	11,900	11,000
			1987	14,400	10,000	10,600	11,600	10,500
44	Proportion below the low-income cutoff (1978 base):							
- families	%		1986	11.8	20.4	9.2	14.0	13.5
			1987	11.3	18.9	10.0	11.7	14.4
- unattached individuals	%		1986	34.6	48.3	42.0	36.5	39.0
			1987	33.5	45.3	32.9	37.7	45.6
- persons (population)	%		1986	14.5	22.1	13.2	16.2	15.8
			1987	14.1	20.8	12.9	14.7	16.9
- children (less than 16 years)	%		1986	17.0	25.7	14.9	19.3	18.8
			1987	16.9	25.9	16.1	16.8	20.5
- elderly (65 years and over)	%		1986	18.9	21.9	18.4	18.3	17.4
			1987	17.3	20.4	12.3	15.8	18.2
45	Average family taxes	\$	1986	7,200	4,300	4,400	5,700	4,800
			1987	8,100	5,100	5,000	6,600	5,500
46	Average family income after tax	\$	1986	34,000	26,100	27,600	29,700	28,500
			1987	35,500	28,600	29,800	31,600	29,700

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
28,100	32,100	26,200	25,700	31,300	31,700	..	..	1986	\$	37
30,700	33,600	27,900	27,000	32,000	32,900	..	..	1987		
9.2	4.8	6.7	5.1	2.2	3.7	..	..		%
19,500	20,700	18,300	17,600	20,100	20,000	..	..	1986	\$	38
20,500	22,000	19,200	17,900	20,800	21,900	..	..	1987		
5.4	6.1	4.6	1.9	3.8	9.6	..	..		%
69.2	64.6	70.0	68.4	64.1	63.2	..	..	1986	%	39
66.8	65.4	68.6	66.3	65.1	66.7	..	..	1987		
38,100	45,800	37,900	37,000	43,700	40,600	..	..	1986	\$	40
40,100	49,000	39,700	39,100	44,400	42,600	..	..	1987		
34,100	41,100	33,300	32,200	39,300	36,900	..	..	1986	\$	41
35,500	43,800	35,800	35,100	40,000	38,000	..	..	1987		
15,300	18,900	18,000	16,200	18,800	19,100	..	..	1986	\$	42
17,100	20,700	16,900	16,600	19,200	18,900	..	..	1987		
11,200	14,700	14,600	11,900	14,500	14,700	..	..	1986	\$	43
12,600	16,200	12,500	12,900	15,000	15,900	..	..	1987		
										44
14.6	8.5	13.0	15.5	10.1	13.2	..	..	1986	%	
13.9	7.8	11.9	12.4	12.7	13.0	..	..	1987		
44.6	28.8	29.1	33.7	31.5	32.9	..	..	1986	%	
40.7	28.5	35.9	33.4	31.5	31.2	..	..	1987		
17.6	10.6	16.3	19.2	13.1	16.5	..	..	1986	%	
16.8	10.3	15.9	15.9	15.6	15.7	..	..	1987		
18.6	12.9	21.9	24.9	14.8	19.9	..	..	1986	%	
19.0	12.3	21.9	18.9	19.9	18.6	..	..	1987		
26.7	13.8	17.0	17.7	16.1	21.5	..	..	1986	%	
25.2	12.7	15.4	13.9	13.8	19.9	..	..	1987		
6,800	8,400	5,900	6,000	7,300	6,800	..	..	1986	\$	45
7,700	9,300	6,700	6,500	8,400	7,800	..	..	1987		
31,300	37,400	31,900	31,000	36,500	33,800	..	..	1986	\$	46
32,400	39,700	34,500	33,000	32,600	36,000	..	..	1987		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Households & Dwellings								
47	Average household income	\$	1986 1987	36,400 38,500	28,800 31,700	28,800 31,300	32,000 34,100	30,700 31,900
*48	Proportion of households with:							
-	VCRs	%	1988 1989	52.0 58.8	50.0 59.9	43.2 50.0	51.8 62.1	51.3 57.0
-	microwaves	%	1988 1989	53.8 63.4	34.3 52.1	45.5 47.7	48.5 62.5	48.3 59.9
-	two or more automobiles	%	1988 1989	25.1 25.0	14.5 12.6	22.7 22.7	18.4 21.0	20.6 18.6
-	vans and trucks	%	1988 1989	24.3 25.5	31.3 32.3	31.8 31.8	25.6 28.2	34.9 34.3
-	air conditioners	%	1988 1989	20.8 24.6	... ...	-- ...	3.6 2.6	4.6 5.8
*49	Proportion of owner-occupied dwellings	%	1988 1989	62.5 63.3	77.1 79.6	75.0 75.0	70.9 71.5	76.5 75.2
*50	Proportion of all owner-occupied dwellings which are mortgage-free	%	1988 1989	50.0 50.6	72.7 69.9	54.5 54.5	56.2 56.6	56.0 59.3
*51	Number of occupied dwellings in need of repairs	'000	1988 1989	2,469 2,369	56 52	14 14	110 94	75 79
*52	Dwellings in need of repair as a proportion of all occupied dwellings	%	1988 1989	26.7 25.0	33.7 31.1	31.8 31.8	35.6 30.4	31.5 32.6
53	Median rent-to-income ratio	%	1987 1988	20 21	18 18	24 22	22 23	20 22
Self-employment								
54	Owners of unincorporated businesses:							
-	with paid help	'000	1988 1989	312 317	6 5	3 3	10 10	7 8
-	without paid help	'000	1988 1989	803 793	13 11	6 5	25 25	16 15
55	Owners of incorporated businesses:							
-	with paid help	'000	1988 1989	468 459	5 5	2 1	11 12	9 9
-	without paid help	'000	1988 1989	102 107	-- --	-- --	-- --	-- --

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
33,500	40,400	33,600	32,200	38,700	35,000	..	..	1986	\$	47
35,600	43,400	34,300	33,800	38,900	37,000	..	..	1987		
										48
49.0	54.2	49.7	47.2	58.0	50.7	..	..	1988	%	
54.4	62.1	56.7	53.4	64.0	57.3	..	..	1989		
49.0	54.6	55.3	64.0	64.9	55.0	..	..	1988	%	
59.6	64.5	65.8	71.2	71.8	62.2	..	..	1989		
21.7	28.3	22.6	24.3	30.1	24.7	..	..	1988	%	
19.9	29.3	21.9	24.6	29.4	25.7	..	..	1989		
14.6	20.1	31.1	45.3	40.4	32.4	..	..	1988	%	
15.6	21.7	32.1	44.1	41.6	34.0	..	..	1989		
13.1	35.6	39.5	27.7	7.8	6.9	..	..	1988	%	
14.7	43.8	43.9	31.0	8.6	7.4	..	..	1989		
55.3	63.2	66.1	70.9	63.9	63.0	..	..	1988	%	49
54.8	64.6	67.4	71.8	64.6	65.2	..	..	1989		
44.1	50.4	55.8	57.5	47.2	49.7	..	..	1988	%	50
46.9	49.4	55.4	61.1	48.3	50.2	..	..	1989		
565	930	122	100	218	279	..	..	1988	'000	51
572	817	113	101	238	287	..	..	1989		
23.4	27.8	32.1	27.9	25.7	24.4	..	..	1988	%	52
22.8	24.0	29.5	28.2	27.5	24.1	..	..	1989		
19	21	22	24	20	23	..	..	1987	%	53
20	20	23	23	22	23	..	..	1988		
										54
69	115	14	20	27	40	..	..	1988	'000	
69	125	13	20	28	37	..	..	1989		
168	264	45	66	104	96	..	..	1988	'000	
162	272	46	67	97	92	..	..	1989		
										55
120	176	17	17	53	59	..	..	1988	'000	
121	157	15	16	58	64	..	..	1989		
22	32	3	4	18	20	..	..	1988	'000	
24	39	3	4	14	19	..	..	1989		

Key labour and income facts

Notes and definitions

No.

- 1 Persons aged 15 and over who are employed or unemployed.
- 2 Labour force as a proportion of the population aged 15 and over.
- 4 Persons who usually work less than 30 hours per week.
- 7 Unemployed as a proportion of the labour force.
- 8 This rate, and rates shown as Indicators 9 and 10, are described in *The Labour Force* (71-001), February 1987.
- 9 The full-time labour force includes persons working full-time, those working part-time involuntarily and unemployed persons seeking full-time work.

The part-time labour force includes persons working part-time voluntarily and unemployed persons seeking part-time work.

On the margins of the labour force includes persons not looking for work because they believe none is available or because they are waiting for recall or for replies from employers.

No.

- 10 The rate shows hours lost through unemployment (unemployed multiplied by average actual weekly hours) and through underemployment (that is, short-time work schedules and involuntary part-time employment) as a proportion of hours worked plus hours lost.
- 30 Data are for agreements involving bargaining units of 500 or more employees. Canada figures include workers covered by federal labour legislation plus agreements involving workers in more than one province.
- 33 Labour income comprises gross wages and salaries (including directors' fees, bonuses, commissions, gratuities, taxable allowances and retroactive pay) and supplementary labour income (payments made by employers for the benefit of employees, including contributions to health and welfare schemes, pension plans, workers' compensation and unemployment insurance).
- 34 Labour income per employee is calculated using LFS estimates of paid workers excluding those absent without pay.
- 44 For an explanation of the methodology underlying the low-income cutoff, see *Income Distributions by Size in Canada* (13-207).



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Here are some of the topics to be featured in upcoming issues of Perspectives on Labour and Income:

■ **Canada versus the world**

When it comes to competing with the industrial output of other countries, how does Canada rank? This study looks at how successful Canada is in terms of price competitiveness, productivity and the integration of high technology in our industries.

■ **Nursing in Canada**

Registered nurses now form the largest professional occupation in Canada. This study examines the labour market characteristics of this profession and offers insights on why the demand for nurses outweighs the supply.

■ **Graduates: the earnings gap**

Have recent female graduates been able to reduce the earnings gap between themselves and their male counterparts? This study looks at their experiences by field of study, occupation and other characteristics.

■ **The working poor**

A thoughtful review of the concepts and measures of low income and a look at labour force activity in families that fall below the low-income cutoff.

■ **A comparison of expenditure patterns: Canada and the United States**

Does a Canadian family spend its money differently than its American counterpart? A look at the differences by family size and type, income levels and homeownership.

■ **Work and substance abuse**

Employers are becoming more concerned about how drug and alcohol problems affect job performance. Is substance abuse more common in certain occupations? A look at the extent of substance abuse in the Canadian work force.

■ **Single-industry resource towns**

Many remote communities revolve around one main industry, perhaps a mining operation. This study will examine the role of single-industry towns in modern-day Canada.

■ **Volunteer jobs**

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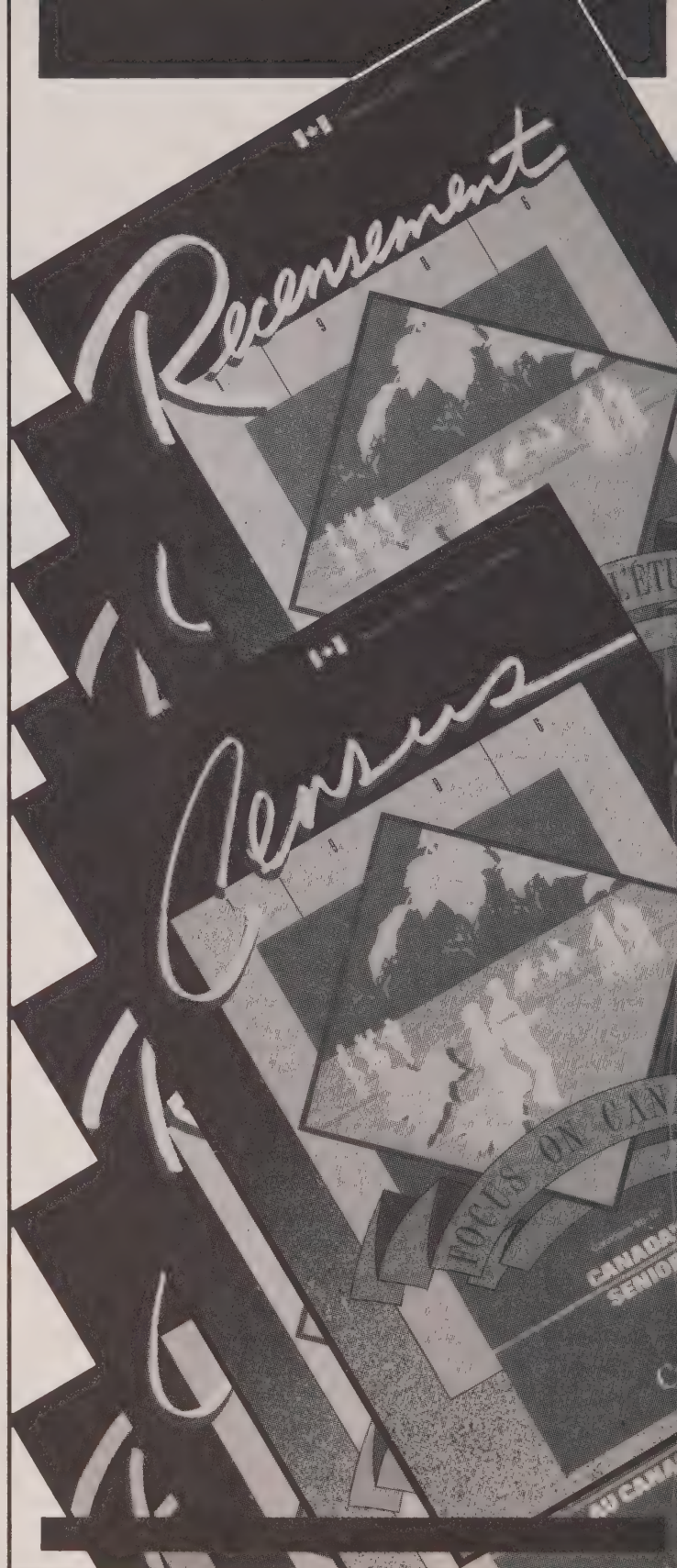
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SUMMER 1990

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- WORK AND LOW INCOME
- THE GIFT OF TIME
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- 19 Male-female earnings gap among recent university graduates**
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Nina Berkson
Montreal-based illustrator

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50 Dependency ratios: An international comparison

Raj K. Chawla

As the need for pension plans and other support systems increases due to Canada's aging population, the proportion of the working-age population (the main contributor to these systems) is dropping. Will Canada face a dependency crisis in the future? This article examines dependency ratios over the past two decades and notes how Canada compares with other industrialized countries.

58 Trading places: Men and women in non-traditional occupations, 1971-86

Karen D. Hughes

As more women have joined the work force over the last twenty years, they have been entering traditionally male occupations. And to a lesser degree, men have been choosing careers in female-dominated occupations. This study looks at the extent of these moves into non-traditional occupations.

Symbols

The following standard symbols are used in Statistics Canada publications:

- .. figures not available
- ... figures not appropriate or not applicable
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- amount too small to be expressed
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- r revised figures
- x confidential to meet secrecy requirements of the Statistics Act

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Forum

From the editor

■ *Perspectives on Labour and Income* begins its second year of publication very much the way it began its first year: soliciting its readers' opinions. We have just completed a telephone survey of subscribers, and I would like to thank the participants again for taking the time to talk to us.

For those of you who were not contacted, the survey was designed to discover how we can improve *Perspectives* to meet your needs. It asked how useful you find it in your work or studies, if you read all or only some of the articles, which of our departments you enjoy, whether the writing style is appropriate, and if the tables and charts do a good job of helping the authors to explain their points. It also asked what topics you would like *Perspectives* to explore in the future. And because your needs depend on what you do, the survey asked what kind of job you have and what type of organization you work for.

None of our readers is excluded from the discussion: should you wish to participate, we encourage you to write to us with your views, comments and suggestions. In the next issue, I'll report briefly on the results of the survey, both the telephone response and the written comments. More importantly though, over the next few issues we will do our best to implement your suggestions for improvements.

The person who will be responsible for making these transformations is our new Managing Editor, Cécile Dumas. Cécile

comes to *Perspectives* with considerable experience in both statistics and labour market analysis. Cécile succeeds Maryanne Webber, who was instrumental in designing *Perspectives* and getting it underway. Maryanne is now the Assistant Director of the Communications Division at Statistics Canada. I would like to thank Henry Pold for taking on the duties of managing editor during the interim between Maryanne's departure and Cécile's arrival.

Turning from domestic to foreign news, two articles in this issue contribute to the topical debate about Canada's place in the world. In "Measuring Canada's international competitiveness", author Andrew Sharpe, head of research at the Canadian Labour Market and Productivity Centre, assesses this country's capacity to compete with the other major economies for foreign markets. On the basis of three generally accepted criteria for competitiveness, he examines how Canada is placed to exploit new market opportunities abroad. This is an issue that will increasingly occupy labour market analysts as international trade looms larger in the new decade.

"Dependency ratios: An international comparison" takes another look at the popular perception that workers in the industrialized nations face a tax-burdened future as a shrinking number of them support a rising number of older non-workers. Raj Chawla shows that in the past twenty years, Canada has changed from a country with the second highest dependency

ratio of the G-7 nations into one with the lowest ratio, at 138 dependants to 100 workers. Much of this is due to the surge in the number of women workers. This conclusion refines the present level of discussion by passing beyond the purely demographic view and assessing the other influences on dependency ratios.

In closing, I would like to mention the contributions to the letters section this quarter. Two writers have taken up the challenge that I have posed in this column, providing some thought-provoking comments on both the data and the analysis. Such criticism is the very essence of dialogue – let's see more of it.

Ian Macredie
Editor-in-Chief

□

Letters

■ I would like to congratulate you on the successful launch of your new publication, *Perspectives on Labour and Income*. I have come to look forward to each issue, but the article on Unemployment and Unemployment Insurance, published in the Winter 1989 issue, raised some concerns about your approach to analytical work, which seems to be symptomatic of analysis at Statistics Canada generally.

While the process of compiling and classifying data is important to its interpretation, my experience is that users are more interested in what the data says than how it was compiled. Specifically with reference to the article on Unemployment Insurance, "Unemployment: A tale of two sources", I think it would have been more interesting to readers to stand the approach on its head and analyse the data from the point of view of "Unemployment: A source of two tales". Simply listing the differences

between the two data sources does not exploit the analytical potential of these divergences. For example, is the relative importance of these differences changing over time? If so, why? Do recessions and expansions systematically affect the source and size of these divergences? Why are more and more claimants being rejected for benefits in the 1980s? There generally seems to be a lack of historical perspective in the analysis.

While I have your attention, I would also like to make some more mundane criticisms. On an editorial note, I find it irritating that graphs are neither numbered nor directly referred to in the text. For example, I was unsure what to make of the graphs on the composition of potential beneficiaries in the unemployment article. I was also curious about the reference in the article to the 1913 and 1920 recessions. Statistics Canada does not have National Accounts data prior to 1926, but without a clear reference, some readers may erroneously assume the data source is Statistics Canada.

Howard Brown
Chief of International and
Macroeconomic Analysis
Department of Finance

□

■ Hidden in the data in the article by Badets and McLaughlin, "Immigrants in product fabricating" in the Winter 1989 issue, lies an era of immigration that is now almost past.

The information on immigration prior to 1961 represents a surge of well-trained, highly motivated people who came to Canada from Europe. They tended to go into large manufacturing organizations similar to the ones they had left, but as immigrants, their qualifications, experience and skills were looked at askance by their Canadian employers. Consequently, they started their careers at the low end of the salary scale.

Once started, their pay remained lower than that of non-immigrants because of the prevailing practice in Canadian industry of raising wages and salaries through a simple percentage increase in existing pay. Only with increasing years of service, usually with the same company, have these earnings begun to exceed that of the non-immigrant.

I also suspect that if the analysis looked simultaneously at qualifications, place of birth and year of immigration, it would be found that Canada's more recent immigrants are not distributed about the middle of the education/skills spectrum as they were in the past, but are concentrated at the poles.

During the last three decades, the fiscal fashion of maximizing short-term gain has brought about the demise of apprenticeships and other training schemes; at the same time, the flow of skilled craftsmen from Europe, on which we have relied, has ceased. Meanwhile, Canadian manufacturing is entering a phase of intense international competition but has a shortage of skilled tradespeople. The only hope in the near future is that Canada can attract some of the skilled people now available from Eastern Europe, where there still remains a cache of tradespeople. In the medium term,

we will have to set up machinery to ensure that manufacturers can rely on a well-trained indigenous supply of skilled tradespeople.

E.J. Crompton
Past Chairman, Eastern
Canada Branch
Institution of Mechanical Engineers□

We welcome your views on articles and other items that have appeared in *Perspectives on Labour and Income*. Additional insights on the data are also welcome, but to be considered for publication, communications should be factual and analytical. We encourage readers to inform us about their current research projects, new publications, data sources and upcoming events relating to labour and income.

Statistics Canada reserves the right to select and edit items for publication. Correspondence, in either official language, should be addressed to: Susan Crompton, Forum and Sources Editor, *Perspectives on Labour and Income*, 5-A Jean Talon Building, Statistics Canada, Ottawa, K1A 0T6, or call (613) 951-0178.

Highlights

Here are some key findings from the articles in this issue of Perspectives on Labour and Income.

Measuring Canada's international competitiveness

■ Between 1981 and 1988, unit labour cost growth in Canadian manufacturing, expressed in U.S. dollars, exceeded that in the United States (3.0% per year versus 0.4%). This faster growth was caused by larger unit labour cost increases (3.4% per year versus 0.4%) that were only partially offset by the depreciation of the Canadian dollar.

■ During the same period, the cost competitiveness of Canadian manufacturing deteriorated against the United Kingdom. But it remained virtually unchanged against France and improved against Japan, West Germany and Italy. The strong appreciation of the yen and the deutschmark against the Canadian dollar explains the gain in Canada's competitiveness versus Japan and West Germany.

■ In 1987, Canada ran a trade deficit of \$7.2 billion in high-technology products, up from \$5.4 billion in 1981. The largest deficits were in computers, electronic equipment, scientific instruments, electric machinery and non-electric machinery. In two high-technology product areas where Canadian firms are doing significant research and development (telecommuni-

cations and aerospace), Canada's trade deficit was relatively better.

■ Canada's productivity growth in manufacturing trailed its major competitors in the '80s. Between 1981 and 1988, the output per hour in Canadian manufacturing rose 2.3% per year, the lowest rate of increase among the seven major OECD countries.

Male-female earnings gap among recent university graduates

■ Despite the increasing proportion of women among university graduates employed full-time, their earnings still lag well behind their male counterparts. In 1984, two years after graduation, female graduates employed full-time had earnings averaging \$24,000 – 88% of the average among men (\$27,000). By 1987 the ratio of female to male earnings had dropped to 82%, with women earning \$31,000 on average compared to \$38,000 for men.

■ By level of degree, the earnings gap was largest among master's graduates with women earning 85% as much as men in 1984, and 81% in 1987. Only at the doctoral level was the gap virtually non-existent, with female doctorates earning 1% more than their male counterparts in 1984 and 1% less in 1987.

■ Differences such as field of study and background explain only about one-third of

the earnings gap between female and male university graduates. Men still earned 5% more than women in 1984 and 7% more in 1987.

Work and relative poverty

■ In 1988, one-fifth of low income families had members who worked the equivalent of one full year of full-time employment. However, only one in ten had earnings which exceeded three-quarters of the low income cut-offs.

■ Low income, two-parent families worked more hours than similar families with no children.

■ Only 1% of two-parent families with two children under 18 years of age, and who worked the equivalent of two full-time, full-year jobs, fell below the low income cut-offs.

The gift of time

■ Over one billion hours were "worked" by volunteers during the 12-month period ending October 1987.

■ Survey results show that the largest number of volunteer jobs involved fundraising (38%), providing information (36%) or organizing, supervising and coordinating activities (35%). About 57% of volunteer jobs were filled by women. Almost one-half of volunteers were aged 25-44 years.

■ More than half of all volunteers had a secondary school education or less. Just over one-fifth of all volunteer jobs were held by persons with a university degree. About one-third of all volunteers were, or had been, in managerial and professional occupations.

■ Volunteer jobs in religious organizations were most likely to involve a year-round commitment – almost 40% of volunteer jobs in this area involved ten or more months compared with less than a quarter of all volunteer jobs.

Dependency ratios: An international comparison

■ During the mid-60s in Canada, there were 67 dependants per 100 persons aged 15-64 years. Of these, 55 were under the age of 15 and 12 were 65 years and over. By the late '80s the number had dropped to 47 (31 under age 15 and 16 age 65 years and over).

■ These age-specific dependency ratios in Canada, France and the United States are projected to drop until the year 2010. For other OECD countries the dependency ratios will rise beginning in the 1990s. The elderly are expected to constitute 50% to 63% of the dependent population by the year 2030.

■ By 2030, the projected Canadian dependency ratio will again increase to 66 for every 100 persons aged 15-64 years. Although the ratio will be higher in West Germany (69 per 100), Canada will have experienced the largest percentage increase (38%) over the 50-year period.

■ During the mid-60s, the labour market adjusted ratio was 199 dependants for every 100 employed Canadians between the ages of 15 and 64. By the late 1980s, the ratio had dropped to 138 dependants per 100 workers. Unlike the European countries and Japan, the ratio in the United States dropped as well, from 215 to 156.

Trading places: Men and women in non-traditional occupations, 1971-86

■ Between 1971 and 1986, more women had moved into male-dominated occupations, becoming lawyers, veterinarians and dispensing opticians. In technical and skilled jobs, there were more female typesetters/compositors and bus drivers.

■ For men entering non-traditional occupations, growth occurred in clerical positions, teaching and certain types of product fabricating, such as textile workers and electronic equipment assembling.

■ The proportion of women in the 25-34 age group was much higher in non-

traditional occupations than for women in the labour force as a whole and these women were more likely to possess a university degree than average female workers.

■ Men in non-traditional occupations tended to be older than the average male worker (half were in the 35-54 age group). These men were three times as likely to have a university degree, mainly because half of them were teachers, an occupation normally requiring a degree.

■ Despite having a higher median employment income than the average female worker, women in non-traditional occupations earned less than men in these occupations. □

Measuring Canada's international competitiveness

Dr. Andrew Sharpe

The issue of international competitiveness received much attention in the eighties as the world economy became increasingly globalized. Canadians became more and more concerned about being able to compete on world markets, although the exact nature of any competitiveness problem was often not well specified.

Does Canada in fact have a competitiveness problem? This article focuses on manufacturing and addresses the question according to three criteria:

- Are Canadian products becoming more or less price competitive?
- How successful are Canada's high-technology industries in competing in world markets?
- How has Canadian manufacturing fared in terms of productivity?

The best measure for determining trends in Canada's cost competitiveness in manufacturing is rates of change in "unit labour costs in common currency" (see *Technical notes*). This measure captures fluctuations in Canada's cost competitiveness relative to other major OECD countries.¹

Dr. Andrew Sharpe is head of research at the Canadian Labour Market and Productivity Centre. He can be reached at (613) 234-0505.

Overall cost competitiveness trends in the eighties

Canada versus the United States

Between 1981 and 1988, unit labour cost growth in Canadian manufacturing, expressed in U.S. dollars, exceeded that in the United States (3.0% per year versus 0.4%). This indicates that Canada's competitive position vis-à-vis the U.S. was substantially weaker in 1988 than in 1981. This faster unit labour cost growth in common currency in Canada was caused by larger unit labour cost increases (3.4% per year versus 0.4%) that were only partly offset by depreciation of the Canadian dollar.

Within the 1981-88 period, Canada's cost competitiveness in manufacturing fluctuated widely. In 1982, common currency unit labour costs in Canada rose at a much faster rate than in the United States, leading to a loss of competitiveness. In 1984 and again in 1985, with the depreciation of the Canadian dollar, common currency unit labour costs rose less in Canada than in the United States. This greatly improved Canada's cost competitiveness (assuming, of course, that exchange rate fluctuations were reflected in product prices).

Canada's merchandise trade surplus with the U.S. closely reflected these changes in cost competitiveness. It almost doubled

Technical notes

Relative unit labour cost indexes: A cost competitiveness indicator

An historical perspective on cost trends can be obtained by comparing ratios between unit labour cost indexes (in common currency) over time. The indexes are published by the United States Bureau of Labor Statistics. By definition, relative unit labour cost ratios are 1.0 in the chosen base year (1977) since all countries have a unit labour cost index of 100. Country A is more cost competitive relative to 1977 vis-à-vis country B if the ratio of the unit labour cost indexes (with the index of country A as the numerator) is less than 1.0, and less cost competitive if the ratio exceeds 1.0. The year when country A's cost competitiveness relative to country B is greatest is the year with the lowest ratio; the year when it is poorest is the one with the highest ratio.

The manufacturing sector is the focus of attention in competitiveness analysis for several reasons. First, it is this sector that provides the bulk of the goods traded on world markets. Second, data are much more readily available for manufacturing than for other sectors. Finally, cost trends in other sectors generally are similar to those in manufacturing so manufacturing trends are a good proxy for those in the overall trading sector of the economy.

Absolute price levels of manufactured goods would be the preferred measure of competitiveness. However, the availability of data on international prices of manufactured goods is much more limited than labour cost data, so the latter are generally used for international competitiveness comparisons. Costs, either in level form or in rates of change expressed in a domestic currency, are by definition

from \$11.0 billion in 1982 to \$21.1 billion in 1985 when Canada's relative cost competitiveness was improving.

Canada versus Europe and Japan

Between 1981 and 1988, the cost competitiveness of Canadian manufacturing deteriorated against the United Kingdom. But it remained virtually unchanged against France and improved against Japan, West Germany and Italy. The strong appreciation of the Japanese yen and the deutschemark against the Canadian dollar explains the gain in Canada's competitiveness versus Japan and West Germany. The very rapid

not comparable between countries. Only when expressed in a common currency, usually U.S. dollars, can international comparisons be made for both cost trends and levels in order to assess international cost competitiveness.

Data sources

Data on trends in unit labour costs in manufacturing are from the U.S. Bureau of Labor Statistics (BLS) publication *International Comparisons of Manufacturing Productivity and Labor Costs Trends, 1988*. This semi-annual publication (released in July and December) provides a long time series on output, employment, hours, productivity, labour compensation and unit labour cost trends in manufacturing for 12 industrial countries (Canada, the United States, the United Kingdom, France, Italy, Germany, Japan, Belgium, Sweden, the Netherlands, Norway and Finland) for the postwar period. Recently, data for Korea and Taiwan have been included. Data are presented in index form whereby all variables for all countries are set at 100 in 1977.

Data on Canada's high technology trade are from the Statistics Canada publication *Science and Technology Indicators* (cat. 88-201), which provides a wide range of data on the use of science and technology in Canada. Data on self-sufficiency in manufacturing are from *Manufacturing: Trade and Measures*, published by Industry, Science and Technology Canada. This source provides data on import penetration, export orientation, trade balances as well as self-sufficiency. Data on science and technology indicators for OECD countries are from the *OECD Science and Technology Indicator Report* series, which are the best sources of information for internationally comparable data on a country's performance in the science and technology area.

growth in Italy's domestic currency unit labour costs (due to large increases in hourly labour compensation) explains the improvement in Canada's cost competitiveness against this country.

Within the 1981-88 period there were two large shifts in Canada's cost competitiveness vis-à-vis Japan and the major European countries, both associated with exchange rate swings. The strong appreciation of the Canadian dollar after 1980 greatly reduced Canada's competitiveness in these markets. The subsequent large depreciation of the Canadian dollar then improved the situation, and since 1987 there has been

Table 1
Trends in international competitiveness and determinants in manufacturing in major OECD countries

	Unit labour costs (\$U.S.)	Exchange rate (versus \$U.S.)	Unit labour costs* (domestic currency)	Hourly labour compensation	Output per hour
Average annual rate of change, 1981-88			%		
Canada	3.0	-0.4	3.4	5.8	2.3
U.S.	0.4	-	0.4	4.3	4.0
Japan	6.2	8.1	-1.7	4.0	5.9
Germany	5.4	3.6	1.7	4.7	2.9
France	3.4	-1.3	4.8	8.4	3.4
U.K.	0.1	-1.8	1.9	7.4	5.4
Italy	4.7	-1.9	6.7	11.2	4.2
Unweighted average	3.3	1.1	2.5	6.5	4.1
Annual rate of change, 1987					
Canada	8.2	4.7	3.3	5.1	1.7
U.S.	-1.0	-	-1.0	2.7	3.7
Japan	10.4	16.4	-5.1	2.3	7.8
Germany	23.8	20.7	2.6	3.9	1.3
France	19.0	15.2	3.3	4.6	1.2
U.K.	11.7	11.8	-	6.4	6.4
Italy	19.4	15.0	3.8	6.5	2.5
Annual rate of change, 1988					
Canada	10.9	7.7	3.2	4.9	1.7
U.S.	0.9	-	0.9	3.6	2.7
Japan	10.5	12.8	-2.1	5.4	7.6
Germany	1.8	2.3	-0.5	4.1	4.6
France	-0.8	0.9	-1.6	3.6	5.3
U.K.	11.8	8.6	2.9	8.0	4.9
Italy	2.9	-0.4	3.4	6.4	2.9

Source: *International Comparisons of Manufacturing Productivity and Labor Costs Trends, 1988*, U.S. Bureau of Labor Statistics, June 1989.

* Certain relationships exist between the columns. Changes in unit labour costs in domestic currency are determined by the interaction of hourly labour compensation and output per hour trends (column 4 minus column 5). Changes in unit labour costs in U.S. dollars in turn are determined jointly by developments in unit labour costs in domestic currency and the exchange rate (column 3 and column 2).

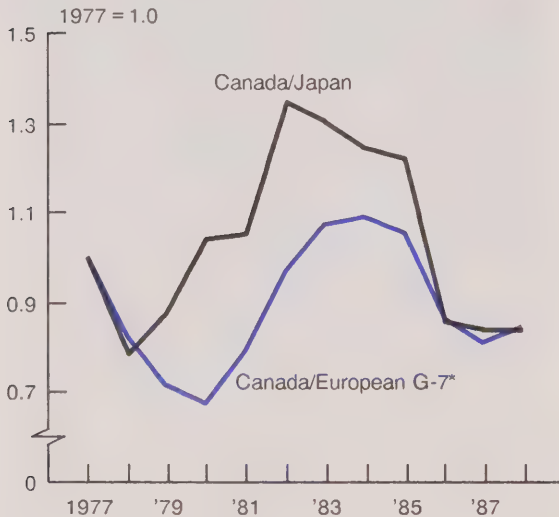
relative stability. These trends illustrate the key role exchange rate changes played in determining relative cost competitive positions in the eighties.

Canada's merchandise trade balance with these five countries has been influenced by these relative cost developments,

although often after lags of one to two years. For example, the improved cost competitiveness arising from the depreciation of the Canadian dollar, starting in 1985, improved Canada's trade balance with these countries by 1987.

Ratio of common currency unit labour costs indexes in manufacturing

In the early and mid-80s Canada's relative unit labour costs were rising more rapidly than those of Japan or Europe.



Source: U.S. Bureau of Labor Statistics
* Average of France, Italy, U.K. and West Germany (trade weighted)

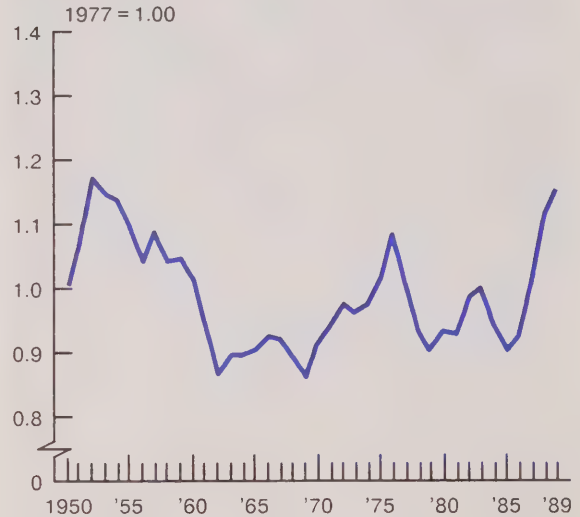
Recent cost competitiveness developments

Since 1986 Canada has suffered a serious deterioration in its cost competitiveness in the U.S. market. The ratio between the indexes of Canadian and U.S. unit labour costs in common currency (1977=1.0) rose from .92 in 1986 to 1.19 in 1989, a 29% jump. Indeed, the ratio in 1989 was at its highest level since the beginning of the series in 1950, indicating that Canada's cost competitiveness in the U.S. market last year was its worst in nearly 40 years. And as a result, the merchandise trade surplus fell to \$13.6 billion in 1988.

Approximately 60% of the increase in relative unit labour costs in Canada vis-à-vis the United States between 1986 and 1989

Relative unit labour costs in manufacturing, Canada/United States

Since 1950 the ratio of unit labour cost indexes has never deviated more than 10% from unity for more than three years.



Source: U.S. Bureau of Labor Statistics

was due to the appreciation of the Canadian dollar. The remaining 40% was attributable to greater growth in domestic currency unit labour costs in Canada, caused by both faster growth in hourly labour compensation and slower productivity growth.

Most current estimates of the purchasing power parity (PPP) value² of the Canadian dollar in terms of the U.S. dollar are in the 78¢ to 80¢ U.S. range. This suggests that the Canadian dollar was over-priced at the average of 85¢ U.S. in 1989. Factors behind the disparity between the PPP value and the exchange rate included historically high interest rate differentials between Canada and the United States, and strong investor confidence in the Canadian economy.

This high value of the Canadian dollar is the main reason for the current weakness of Canada's cost competitiveness in the U.S. market. Past experience, however, suggests that exchange rates gravitate towards purchasing power parity levels, although sometimes only after long lags. Since 1950, the ratio between the Canadian and U.S. unit labour cost indexes has never deviated more than 10% from 1.0 for more than three years. This supports the view that the current weakness in cost competitiveness is temporary and will be eliminated when the exchange rate adjusts to its purchasing power parity value.

Relative to Japan and the four major European countries, Canadian manufacturing did not suffer any significant loss in cost competitiveness in 1987 or 1988 (Table 1). This reflects the lack of any significant appreciation of the Canadian dollar vis-à-vis these countries' currencies.

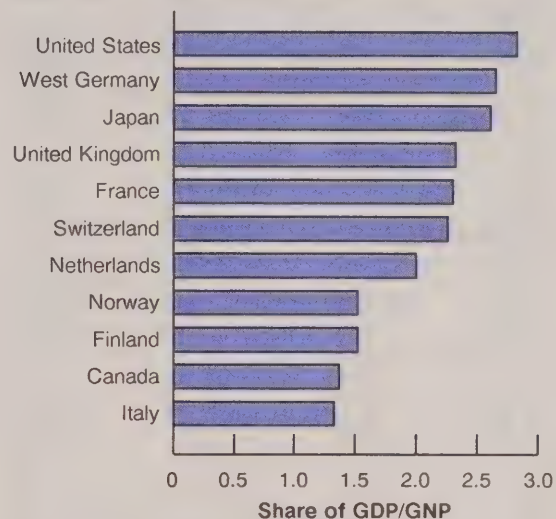
Canadian competitiveness in high-technology products

Within manufacturing, one sector warrants special mention – high-technology products. Essentially two types of criteria exist for evaluating the competitiveness of a country's high-technology sector: (1) indicators showing the capacity to produce high-technology goods (such as research and development expenditure, the number of patent applications and the number of research and development personnel); and (2) indicators reflecting the ability to sell high-technology goods on the world market (such as high-technology trade balances and self-sufficiency ratios).³

In 1985 among the seven major OECD countries, Canada had the second lowest ratio of research and development expenditure to GDP. Canada's relative performance was also below that of Switzerland, the Netherlands, Norway, and Finland.

Research and development expenditure, 1985

Canada's ratio of R&D expenditure to GDP lagged behind most of the major OECD countries.



Source: OECD, Paris

Other indicators of a country's capacity to produce high-technology products also show Canada trailing its major competitors. For example, in 1985, patent applications in Canada on a per capita basis were less than half that of the United States and France, one-third that of the United Kingdom, one-sixth that of Germany, and less than one-eighth that of Japan. According to the OECD, the ratio of research and development personnel was also well below that in the other countries.

The reasons for Canada's low level of research and development expenditure are vigorously debated. Possible factors include Canada's high level of foreign ownership, with multi-nationals centralizing research and development at the head office; an industrial structure characterized by a high proportion of industries that traditionally

undertake little research and development; and a basic reluctance by Canadian firms to make risky research and development expenditures.

The weakness of our technological effort, not surprisingly, leads to large trade deficits in high-technology products. Indeed, Canada has by far the lowest ratio of exports to imports in high-technology products among the seven major OECD countries.

Table 2
Balance of trade in "high-tech" goods

	Millions of dollars (current dollars)	Proportion to total merchandise trade (exports + imports)
		%
1978	-2,990	2.9
1979	-3,785	3.0
1980	-4,611	3.2
1981	-5,447	3.4
1982	-4,232	2.8
1983	-5,097	3.1
1984	-6,382	3.2
1985	-6,368	2.9
1986	-7,011	3.1
1987	-7,166	3.0

Source: Table 72, *Science and Technology Indicators*, 1988, cat. 88-201, March 1989, Statistics Canada

Table 3
Balance of trade in "high-tech" products, 1981 and 1987 (millions of dollars)

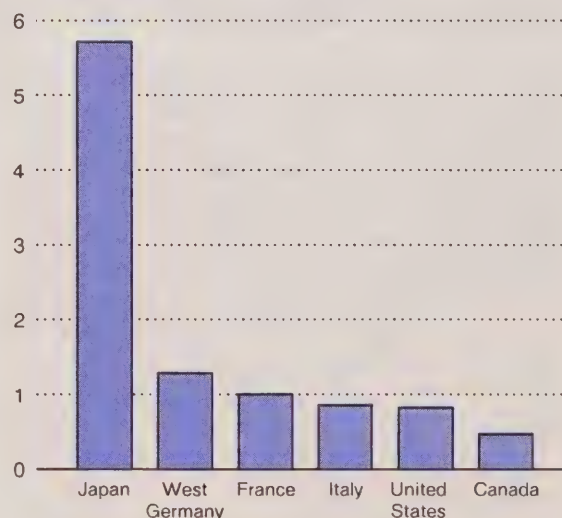
	1981	1987
Aerospace	-279	410
Computers	-1,376	-2,680
Electronic equipment	-504	-1,115
Telecommunications equipment	20	-36
Scientific instruments	-1,146	-1,393
Electrical machinery	-537	-669
Non-electrical machinery	-1,490	-1,468
Chemical products	-134	-215
Total	-5,447	-7,166

Source: Table 68, *Science and Technology Indicators*, 1988, cat. 88-201, March 1989, Statistics Canada

In 1987, Canada ran a trade deficit of \$7.2 billion in the high-technology area, up from \$5.4 billion in 1981 (Table 2). This represented about 3% of total trade (exports plus imports), a proportion that has been relatively stable since the late seventies. For specific high-technology products, as defined by Statistics Canada, the largest deficits are in computers, electronic equipment, scientific instruments, electric machinery and non-electrical machinery (Table 3). In two high-technology product areas where Canadian firms are doing significant research and development (telecommunications and aerospace), Canada does not have significant trade deficits.⁴

Export/import ratios in high-technology products, 1985

Overall, Canada is not competitive in high-technology products.



Source: OECD, Paris

The high-technology deficit manifests itself in machinery, electrical products, and other manufacturing, as indicated by the low self-sufficiency ratios (Table 4). Canada

Table 4
Implicit self-sufficiency rates* in manufacturing

	1966	1973	1981	1987
Food and beverage	103.4	102.3	100.9	102.3
Tobacco	99.4	99.0	107.9	105.1
Rubber and plastics	89.1	85.2	89.2	92.1
Leather	89.6	79.4	71.5	56.9
Textile	78.6	77.9	83.3	85.7
Knitting	90.3	75.2	76.1	68.2
Clothing	97.0	97.2	86.9	77.9
Wood	150.6	168.1	160.1	172.9
Furniture	96.9	95.5	97.9	107.5
Paper	188.7	186.4	218.5	209.5
Printing and publishing	88.9	88.7	88.9	92.9
Primary metals	132.5	137.0	129.2	130.3
Metal fabricating	90.8	89.9	94.2	96.8
Machinery	53.5	52.0	56.5	54.7
Transport equipment	88.6	93.9	88.3	97.8
Motor vehicle	105.1	121.7	123.1	127.8
Motor vehicle parts	57.1	61.9	52.3	68.5
Electrical	86.0	78.9	70.1	67.6
Non-metallic	89.9	92.6	90.4	91.8
Petroleum and coal	90.0	101.0	105.1	99.8
Chemicals	90.0	85.3	97.9	93.4
Other	69.4	59.2	60.2	57.8
Total manufacturing	97.2	97.2	97.3	98.3

Sources: *Manufacturing Trade and Measures, 1966-84, Regional Industrial Expansion, 1985* for data for 1966 and 1973; *Manufacturing Trade and Measures, 1981-87, Industry, Science and Technology Canada, 1988* for data for 1981 and 1987

* The ratio is defined as total shipments divided by the Canadian market.

enjoyed large trade surpluses in wood, paper, and primary metals – industries characterized by homogeneous products and relatively little product innovation.

It appears that, relative to its major competitors, Canada is not competitive in high-technology products. However, there are divergent views on whether the weakness in high technology is in fact a general competitiveness problem.

High-technology and competitiveness

A dynamic high-technology sector is viewed by some as being essential to a country's overall ability to compete on world markets. This sector is said to foster new technologies that boost productivity in all sectors of the

economy. Some analysts argue that without a strong domestic high-technology sector innovation and productivity advances would be more difficult in the more traditional sectors.

In addition, without innovative high-technology industries to generate new products, a country's potential for growth may be restricted. Future demand growth for high-technology products on world markets is expected to greatly exceed that anticipated for more traditional products, particularly natural resources-based commodities. This reasoning suggests that, without a strong high-technology sector, a country may become a technological backwater, unable to compete in the emerging sectors that are expected to fuel

the future growth of the world economy. From this perspective, weakness in high-technology products implies a general lack of international competitiveness.

In contrast, other analysts feel that a weak high-technology sector does not necessarily mean a country has a general competitiveness problem. From this viewpoint, a country can function very well in terms of maintaining a high standard of living for its citizens, and in improving that standard, without being internationally competitive in high-technology products.

Rather, a country can import these products and concentrate on areas, such as natural resources or labour-intensive products, where its basic comparative advantage may lie. Weak high-technology industries do not necessarily mean industries cannot adopt the latest technology. Large, and even growing, high-technology deficits do not indicate any lack of overall competitiveness if there are commensurate surpluses in other areas. From this viewpoint, developments in the overall trade balance and cost structure are more important than developments in any one sub-aggregate – even the supposedly crucial high-technology sector.

Those sympathetic to the first perspective would consider that Canada's weakness in high-technology products indicates a general competitiveness problem. Those subscribing to the second view would conclude there is no cause for concern.

Canada's ability to increase productivity

A country can in theory maintain and even improve its cost competitiveness through currency depreciation, irrespective of domestic trends in hourly labour compensation and productivity. However, when productivity growth is weak (either in an absolute sense or relative to its major

competitors), an exchange rate depreciation reduces the country's standard of living (either in absolute terms or relative to trading partners) because of the increased cost of imports.

For this reason, the proper test of competitiveness may not simply be the ability to sell goods on the world market and achieve balanced trade. Rather, it may be the ability to do so while achieving an acceptable rate of improvement in the standard of living (Hatsopoulos, Krugman and Summers, 1988; and Young, 1988). A key determinant of the rate of improvement in the standard of living is productivity growth. By this criterion, a country's productivity performance is a key factor in its general competitiveness performance.

Canada's productivity growth in manufacturing trailed its major competitors in the eighties. Indeed, between 1981 and 1988, U.S. Bureau of Labor Statistics data show that output per hour in Canadian manufacturing rose 2.3% per year, the lowest rate of increase among the seven major OECD countries (Table 1). OECD data for the 1979-85 period also show that Canada had the worst performance (Table 5) in terms of both the growth rate of output per person employed and total factor productivity.⁵

Summary and conclusion

This article has examined whether Canadian manufacturing has a general competitiveness problem from three perspectives: cost competitiveness, the performance of the high-technology sector, and the relative ability to raise productivity. In all three areas a case can be made that Canada has a general competitiveness problem.

Large increases in common currency unit labour costs since 1986 (due to the strong appreciation of the Canadian dollar vis-à-vis the U.S. dollar) have led to a

Table 5

Trends in productivity growth in manufacturing in major OECD countries (average annual percent change)

	Labour productivity			Total factor productivity*		
	Pre-1973	1973-79	1979-85	Pre-1973	1973-79	1979-85
	%					
Canada	4.5	1.6	1.5	3.0	0.4	0.1
U.S.	3.2	1.3	3.4	2.8	0.3	2.5
Japan	10.9	5.6	6.2	6.5	2.2	4.5
Germany	5.9	4.3	3.1	2.9	2.2	1.5
France	7.1	4.9	3.5	4.9	2.4	1.2
U.K.	4.6	1.2	3.9	2.9	-0.4	1.9
Italy	8.0	3.3	3.3	4.4	1.7	1.3

Source: Table 20, OECD Economic Outlook, December, 1987

* Labour input for total factor productivity is persons employed, and hours worked for labour productivity.

significant deterioration in the cost competitiveness of Canadian manufactured goods in the U.S. market. From a long-term perspective, this competitiveness problem is probably the least serious of the three types of problems discussed. If historical experience is any guide, the exchange rate will eventually adjust towards its purchasing power parity value and restore Canadian cost competitiveness. A key factor in determining the length of time needed for adjustment will be developments in interest rate differentials between Canada and the United States.

Canada's large trade deficits for most high-technology products and its weak capacity to develop new products suggest that it has a general competitiveness problem. Such a conclusion, however, presumes that a country can be considered internationally competitive only if it has a dynamic high-technology sector. This view relies on the belief that the high-technology sector is crucial for the long-term health of the economy (1) because of its role in creating a favourable technological environment for productivity advances in all sectors, and (2) because high-technology products have the greatest growth potential.

If one does not accept this view, then Canada's poor performance in high-technology products is not necessarily indicative of a general competitiveness problem. Canada can still be considered internationally competitive if it continues to be successful in selling products reflecting its comparative advantage. In addition, proponents of this view believe that a weakness in the high-technology sector does not necessarily imply that other products cannot be produced with the latest technology.

Canada's ability to improve its overall productivity level relative to its competitors, however, may indeed indicate a competitiveness problem. In the eighties Canada's productivity growth in manufacturing was the slowest among the major OECD countries. This situation represents the most serious potential competitiveness problem facing Canada, and hence its greatest challenge. Unlike the weak cost competitiveness position, it is a long-term, not a short-term, phenomenon. And, unlike the weakness of its high-technology sector, there is a consensus that this situation could impede Canada's future ability to compete in world markets. □

Notes

¹ The data are in index form, so no conclusion can be drawn about the absolute degree of competitiveness. Costs are defined as equalling 100 in a base year, and costs in other years are calculated as a percentage of the base year plus 100. For example, if 1977 is the base year and labour costs in 1987 are 50% higher, then the index for 1987 would be 150.

² Purchasing power parity (PPP) exists between two countries when a given amount of money expressed in a common currency purchases the same amount of goods in both countries. When parity does not prevail, traders can purchase goods in the cheaper country and sell them in the other. This process in turn affects supply and demand conditions in the two countries and moves the exchange rate towards the purchasing power parity level. The prime determinant of the purchasing power parity exchange rate between two countries is their relative rates of inflation as the PPP rate adjusts so that price levels in the two countries remain constant when measured in a common currency. To keep purchasing power constant between two countries, the country with a higher domestic rate of inflation experiences a depreciation in its nominal exchange rate. In 1989, the OECD estimated that the PPP value of the Canadian dollar vis-à-vis the U.S. dollar was around 80¢ U.S., compared to the actual value of 84¢ U.S.

³ Self-sufficiency ratios provide information on both the absolute level and the trends in a country's competitiveness at both an aggregate and industry level. The greater the ability of a country to supply itself with a particular product, the greater its competitiveness. The ratio is defined as total shipments divided by the Canadian market. A ratio exceeding 1.0 indicates that Canada produces more than it consumes and hence enjoys a trade surplus in that area; a ratio less than 1.0 means Canada consumes more than it produces and has a trade deficit.

⁴ Canada does have a significant trade surplus in automotive products, considered by some analysts to be a high-technology product, although not defined as such in official definitions of high technology. This surplus reflects Canada's cost competitiveness in this area vis-à-vis the United States, which has led the auto companies to increase Canada's share of the North American market.

⁵ Total factor productivity is calculated by dividing an index of total factor input into an output index. The growth rates of factor inputs, generally labour and capital but sometimes also raw materials, are combined into a total factor input growth rate by weighting the factors by their income share, assuming that these shares reflect the factor's relative contribution to output.

References

Cuomo Commission on Trade and Competitiveness. *The Cuomo Commission Report: A New American Formula for a Stronger Economy*. New York, Simon and Schuster, 1988.

Daly, D.J. and D.C. MacCharles. "On Real Wage Unemployment," *Focus*, No. 18. Vancouver, 1986.

Durand, M. and C. Giorno. "Indicators of International Competitiveness: Conceptual Aspects and Evaluation," *OECD Economic Studies*. Paris, Autumn 1987, pp. 147-183.

Hatsopoulos, G.N., P.R. Krugman and L.H. Summers. "U.S. Competitiveness: Beyond the Trade Deficit," *Science*, Vol. 241. Washington, D.C., July 15, 1988, pp. 299-307.

Industry, Science and Technology Canada, et al. *Manufacturing Trade and Measures, 1981-87: Tabulations of Trade, Output, Canadian Market, Total Demand and Related Measures for Manufacturing Industrial Sectors*. Ottawa, 1988.

Klein, L.R. "Components of Competitiveness," *Science*, Vol. 241. Washington, D.C., July 15, 1988, pp. 308-313.

Lafrance, R. "Technical Note: Measuring Canada's International Competitiveness," *Bank of Canada Review*. Ottawa, September 1988, pp. 17-32.

Organisation for Economic Co-operation and Development. *OECD Economic Outlook*, No. 44. Paris, December 1988.

Organisation for Economic Co-operation and Development. *OECD in Figures*, Supplement to the OECD Observer, No. 152. Paris, June/July 1988.

Premier's Council of Ontario. *Competing in the New Global Economy*, Vol. 1. Toronto, 1988.

Rugman, A.M. "A Canadian Strategy for International Competitiveness," *Business Quarterly*, Vol. 50, No. 3. London, Ont., 1985, pp. 18-21.

Statistics Canada. *Science and Technology Indicators*, 1988, Cat. 88-201. Ottawa, March 1989.

Young, J.A. "Technology and Competitiveness: A Key to the Economic Future of the United States," *Science*, Vol. 241. Washington, D.C., July 15, 1988, pp. 313-316.



Male-female earnings gap among recent university graduates

Ted Wannell

The earnings gap that exists between men and women is not news. In the past, traditional family roles dictated the division of labour within the household: for most women, a paid working career ended at marriage or the birth of a first child. So women did not accumulate the skills and experience necessary to climb the salary ladder. Women's salaries were further hampered by their lower level of post-secondary education, particularly in fields that led to high-paying occupations. For these and other reasons including the possibility of discrimination, a wide gulf existed between the salaries of working men and women.

But recent decades have witnessed dramatic change in the role of women in the Canadian labour market. More and more women in the younger cohorts have entered and remained in the full-time work force. As a result, women's share of the full-time work force rose from 27% in 1967 to almost 39% in 1988.

Gains in the educational attainment of women have been equally dramatic. While only a quarter of undergraduate university degrees went to women in the early 1960s, women received more than half the undergraduate degrees in the late 1980s.

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Women still lag behind at the postgraduate level, but are catching up rapidly. The female share of master's degrees rose from 19% in 1961 to 45% in 1989. Women accounted for less than one-tenth of earned doctorates in 1961, but nearly one-third by 1989.

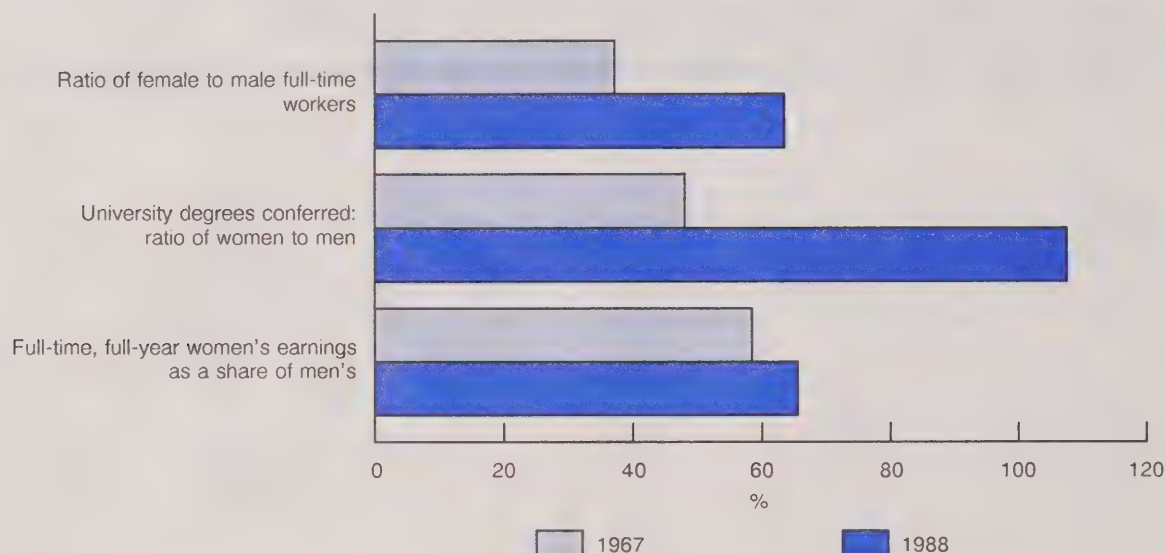
Despite the increasing shares of women among university graduates and full-time workers, their earnings still lag well behind those of men. The earnings gap has narrowed in recent years, but it remains substantial. In 1987, women working full-time for the full year earned, on average, one-third less than their male counterparts.

That such a large gap persists can be partially explained by differences in the male and female work forces. Among the older age groups, men generally have advantages in experience and educational credentials. Among the less educated groups in the work force, the predominantly male, blue-collar workers are paid higher wages than the mainly female, "pink-collar" workers. In such muddy waters it is very difficult to compare the earnings of men and women on an equal footing.

What could one learn by following a single recent cohort of labour market entrants whose main earnings-related characteristics were known? Would such a study reveal that men and women with the same qualifications had similar earnings? The National Graduates Survey (NGS) of 1984 and the Follow-up of 1982 Graduates

Women in the work force

Despite the increasing proportions of women among full-time workers and new university graduates their earnings still lag behind those of men.



Sources: Labour Force Survey, University Student Information System, and Survey of Consumer Finances

Survey (FOG) in 1987 yield a unique perspective on the recent status of the earnings gap between men and women. The target population for these surveys includes the 1982 graduates of all universities in Canada.¹ Focusing on this group of men and women, this study examines two issues:

- Given recent increases in female labour force participation and educational attainment, does an earnings gap still exist for men and women with equal qualifications? And if so, why?
- How does the earnings ratio change over time within a particular cohort of graduates?

The earnings gap is first examined by field and level of study. Although these

variables offer some insights, many other factors could contribute to different earnings for men and women. Accordingly, a multivariate model is then presented to simultaneously account for many of the factors that can affect an individual's earnings. A decomposition technique is applied to separate the earnings gap into two components:

- the explained component, that is, the part of the earnings gap attributable to differences in the labour market-related characteristics of men and women; and
- the residual component, that is, the proportion of the gap due to differences in the way men and women are rewarded for those characteristics.

A brief note on the data

The National Graduates Survey (NGS), 1984, and the Follow-up of 1982 Graduates Survey (FOG), 1987, captured extensive demographic, educational and labour market information about the 1982 graduates of universities, community colleges and vocational and trade programs. Included in each survey was a question asking the respondent to estimate their yearly earnings (to the nearest thousand dollars) based on the job held at the time of the interview.

The analysis in this report is limited to university graduates working full-time. This restriction ensures that more or less equal amounts of labour are being compared. It also follows that the earnings figures approximate full-time, full-year earnings (because respondents are estimating their yearly earnings based on the current, full-time job). The descriptive comparisons of 1984 earnings include all graduates working full-time in June 1984. A similar restriction applies to the comparison of 1987 earnings, yielding the following maximum sample sizes:

	1984	1987
Men	5,141	4,986
Women	4,032	3,689
Total	9,173	8,675

Since missing values in the data set were not imputed, the exact sample size for each comparison is somewhat smaller.

A much more restrictive definition was used in the multivariate analyses: only those employed full-time at each of five separate time points were included. The resultant maximum sample is 5,971 individuals (3,582 males and 2,389 females). The working samples are substantially smaller due to missing values among the many variables included in the analysis.

More detailed information on the surveys is available from the Special Surveys Group, Statistics Canada at (613) 951-4577. An overview of the results of the 1984 survey can be found in Clark, Laing and Reznitzner, 1986.

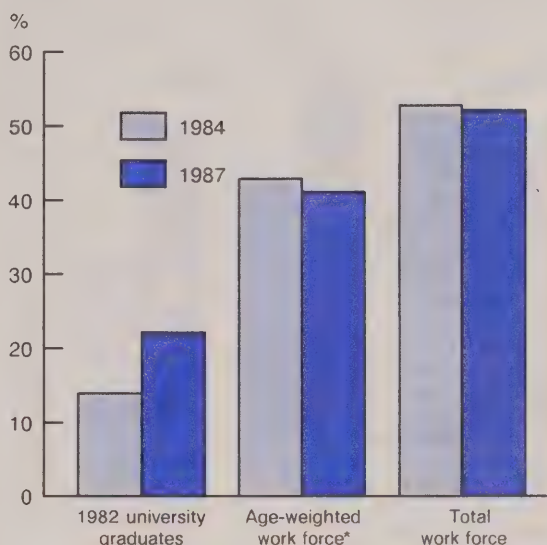
Female university graduates earn less

Among 1982 university graduates, women employed full-time in 1984 earned an average of \$24,000 – 88% of the male average of \$27,000. By 1987, the ratio of female to male earnings had dropped to 82%, with earnings for women averaging \$31,000 compared to \$38,000 for men.²

The earnings gap was smaller for the university graduates than for their peers in

Male-female earnings gap, full-time, full-year workers

The earnings gap was smaller for 1982 university graduates than for their peers in the work force.



Sources: National Graduates Survey, Follow-up of 1982 Graduates Survey, and Survey of Consumer Finances
* Comparable to 1982 university graduates.

(See note 3.)

the work force at large. Among full-time, full-year workers the same age as the graduates, women's 1984 earnings averaged \$18,000 and men's averaged \$25,000 – a ratio of 70%.³ The corresponding ratio for 1987 was 71%. Thus, for this cohort, a university education was a factor in reducing but not eliminating the earnings difference.

Earnings gap narrows slightly within field of study

What could account for the persistent earnings gap? The divergent fields of study followed by men and women are an obvious starting point (Table 1). Since many fields tend to be dominated by one sex, a tendency

Table 1
Field of study distribution of 1982
university graduates employed full-
time*, 1987

Field of study	Men	Women
	%	
Total	100.0	100.0
Education	15.7	27.7
Fine arts	1.5	2.3
Applied arts	--	1.4
Journalism	--	--
Other humanities	7.8	13.7
Sociology, anthropology and demography	1.7	4.1
Criminology	--	--
Law	3.4	2.6
Economics	5.3	1.7
Geography and environment	4.1	2.2
Political science	2.3	1.9
Psychology	2.3	6.4
Other social sciences	22.0	14.9
Agriculture	1.5	--
Biochemistry, biology and zoology	2.4	2.1
Home economics	--	1.3
Veterinary medicine	--	--
Architecture	0.9	--
Engineering	14.1	1.4
Forestry	0.9	--
Landscape architecture	--	--
Dentistry	0.9	--
Medicine	2.7	1.8
Nursing	--	4.8
Optometry	--	--
Pharmacy	--	1.2
Public health	--	--
Computer sciences	3.4	1.2
Mathematics	2.3	1.3
Chemistry, geology and metallurgy	1.8	3.2
Meteorology	--	--
Physics	--	--

Source: Follow-up of 1982 Graduates Survey

* Sample comprises graduates employed full-time at the time of the interview.

for men to gravitate to high-reward fields of study would contribute to an earnings gap. A simple method to check for this effect is to compare the earnings ratios within each field of study to the overall ratio (Table 2). The effect of divergent fields of study seemed relatively weak in 1984; the within-field

earnings ratio averaged 89%, just one percentage point greater than the overall ratio. However, the spread had widened to three percentage points by 1987, when the within-field ratios averaged 85%, compared with the 82% overall ratio.

Even though the earnings gap was generally smaller within fields of study, women graduates of virtually all programs still earned less than men. In fact, in only one field – political science – did female graduates earn at least as much as men in 1984. But the earnings pendulum had swung back in favour of men by 1987.

Earnings ratio varies by degree level

The earnings ratio did not follow a consistent pattern by degree level. The earnings gap was largest among master's graduates, with ratios of 85% in 1984 and 81% in 1987. This compared with 90% and 83% for those with an undergraduate degree.⁴ The gap is virtually nonexistent at the doctorate level: women with a Ph.D. earned 1% more than men in 1984 and 1% less in 1987.

Degree level obviously has an effect on earnings – postgraduate degrees generally lead to higher salaries. University graduates with doctorates who worked full-time in 1984 earned 45% more than those with undergraduate degrees (36% more in 1987). Master's level graduates occupied the middle ground. Since more men received postgraduate degrees, one would expect their earnings to be somewhat higher.

Combining the effects of field of study and degree level should then narrow the earnings gap. And this is indeed the case. In a simple average across ten major fields of study and three degree levels, female university graduates earned 94% of the salaries of their male counterparts in 1984 and 92% in 1987 (Table 3). Of course this average, which gives equal weight to the earnings ratios for each degree level, is biased by Ph.D. holders, who make up only a

Table 2
Female to male earnings ratios of 1982
university graduates by field of study*

Field of study	Female to male earnings ratio	
	1984	1987
	%	
All fields	88	82
Education	87	86
Fine arts	96	89
Applied arts	--	--
Journalism	--	--
Other humanities	98	94
Sociology, anthropology and demography	99	97
Criminology	--	--
Law	88	95
Economics	88	75
Geography and environment	83	82
Political science	104	86
Psychology	83	82
Other social sciences	90	86
Agriculture	--	--
Biochemistry, biology and zoology	90	95
Home economics	--	--
Veterinary medicine	--	--
Architecture	--	--
Engineering	89	89
Forestry	--	--
Landscape architecture	--	--
Dentistry	--	--
Medicine	81	87
Nursing	--	--
Optometry	--	--
Pharmacy	--	--
Public health	--	--
Computer sciences	95	91
Mathematics	97	93
Chemistry, geology and metallurgy	90	84
Meteorology	--	--
Physics	--	--
Unweighted average of field of study ratios	89	85

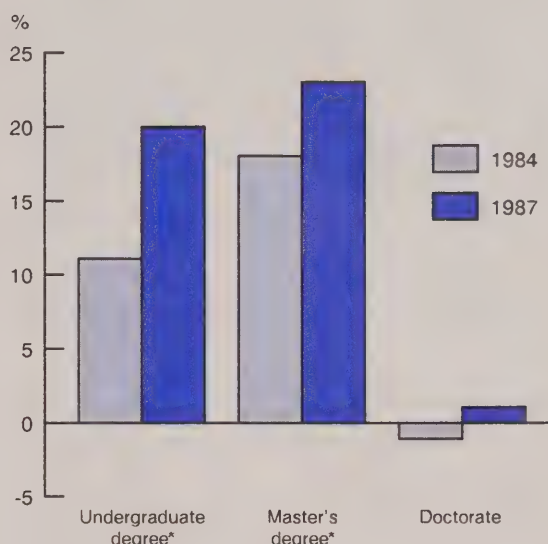
Sources: National Graduates Survey and Follow-up of 1982 Graduates Survey

* Sample for each year comprises graduates employed full-time at the time of the interview.

small proportion (1%) of the graduate population. Furthermore, broad field of study comparisons are plagued by other problems. For example, the medical and

Male-female earnings gap, 1982 university graduates

Only at the Ph.D. level did women and men have similar earnings.



Source: National Graduates Survey and Follow-up of 1982 Graduates Survey

* See note 4.

health sciences category compares a male population consisting mostly of medical doctors to a female population of mainly nursing graduates.

Although further cross-classifications or more detailed categories might create more comparable groups, small sample sizes severely limit the range of such analyses. To simultaneously account for the many characteristics relevant to an individual's earnings, a multivariate model must be used.

A multivariate model of the earnings gap

In the previous section, the earnings gap between male and female graduates was categorized by only one or two variables at a

Table 3

Female to male earnings ratios of 1982 university graduates, by field of study and level of degree*

Field of study	Level of degree	Female to male earnings ratio	
		1984	1987
		%	%
All fields	All levels	88	82
	Undergraduate	90	83
	Master	85	81
	Doctorate	101	99
Education	Undergraduate	92	89
	Master	83	86
	Doctorate	91	88
Fine arts and humanities	Undergraduate	99	91
	Master	95	95
	Doctorate	102	94
Commerce, economics and law	Undergraduate	87	87
	Master	87	89
	Doctorate	--	--
Other social sciences	Undergraduate	94	90
	Master	89	84
	Doctorate	93	91
Agriculture and biological sciences	Undergraduate	91	80
	Master	89	84
	Doctorate	87	89
Engineering	Undergraduate	91	89
	Master	80	--
	Doctorate	--	--
Medical and health sciences	Undergraduate	65	54
	Master	77	50
	Doctorate	158	118
Mathematics and physical sciences	Undergraduate	95	93
	Master	83	89
	Doctorate	94	94
Unweighted average of field of study/level of degree ratios		94	92

Sources: National Graduates Survey and Follow-up of 1982 Graduates Survey

* Sample for each year comprises graduates employed full-time at the time of the interview.

time. A multivariate approach allows the effects of a number of variables to be studied simultaneously. In this section, a technique known as decomposition is used to analyze the sex differential in earnings.

The decomposition technique is based on a human capital model of earnings. An individual's earnings are assumed to be a function of his or her earnings-related characteristics (such as education, skill,

experience and family background) and the rewards for each of these characteristics as determined by the labour market. The average level of each characteristic possessed by men and women is easily determined from the NGS and FOG data base. The returns to the characteristics are estimated by fitting linear regression equations for the male and female subpopulations.

The decomposition technique is then used to determine how much of the percentage difference in mean earnings is due to the differing characteristics of men and women (the explained component) and what portion is due to unequal rewards for those characteristics (the residual component). (For details of the technique, see *Decomposition methodology*.)

The characteristics in the model include age, language, province, inter-provincial mobility, parents' postsecondary education, marital status, presence of children, work experience prior to studies, detailed field of study, degree level and public sector employment. (For a list of the categories for each characteristic, see Wannell, 1989.)

Note that the industry and occupation of employment are not included in the model. These characteristics are earnings-related, but the differences observed in men and women may be partly due to demand-side discrimination. (See *Discrimination and alternative explanations*.) For example, it is possible that barriers to women exist in some high-paying industries or occupations. If these variables were included in the model, the component of the earnings gap explained by differences in supply-side characteristics of men and women could be inflated by the potential effects of discrimination. On the other hand, employment sector (public or private) is included in the model since the implementation of employment equity programs and related initiatives may

prevent significant barriers in the public sector. In other words, somewhat different rules may apply in the public and private sector labour markets.

The equations were estimated for earnings in 1984 and 1987. The population was limited to graduates with valid earnings data in 1984 and 1987 who were working full-time at each of the five time points covered in the surveys.⁵ Thus, the subpopulations of women and men have a history of strong and generally equal attachment to the labour force.

Slightly higher earnings potential for male graduates

The differing earnings-related characteristics of men and women accounted for relatively little of the earnings gap in 1984 and 1987. The explained component represented one-third of the percentage difference in earnings in each year (Table 4). Whereas male graduates earned 15% more than female graduates in 1984, and 22% more in 1987, the model estimates that if men and women received equal returns to their characteristics the earnings gap would have been only 5% and 7%, respectively. So male graduates, on average, had slightly "better" earnings-related characteristics than women. But what were the important characteristics?

Field and level of study count

The explained component of the earnings gap was distributed across six main categories of explanatory variables (Table 5). The different fields of study followed by men and women were the most important category, comprising 133% of the net difference in 1984 and 84% in 1987.⁶ The higher percentage of men with master's degrees was also a major factor in 1984, but less so in 1987.

Table 4
Decomposition of the male to female earnings ratio among 1982 university graduates*

	1984	1987
Explained component (differing characteristics)	1.05	1.07
Residual component (differing returns to characteristics)		
Male premium	1.04	1.07
Female penalty	1.05	1.06
Male to female earnings ratio† (product of three components)	1.15	1.22
(Female to male earnings ratio†)	0.87	0.82

Sources: *National Graduates Survey and Follow-up of 1982 Graduates Survey*

* Sample for both years comprises graduates employed full-time at five time points: January 1983, October 1983, June 1984, January 1986 and March 1987.

† Ratio of geometric mean earnings.

Table 5
The "explained" component of the male to female earnings gap among 1982 university graduates*

	Composition of explained component of earnings gap	
	1984	1987
	%	
Total†	100	100
Demography/family	-11	3
Field of study	133	84
Level of degree	26	9
Previous employment experience	-9	-6
Region	1	-
Public sector employment	-40	10

* The sample for both years comprises 1982 university graduates employed full-time at five time points: January 1983, October 1983, June 1984, January 1986 and March 1987.

† The total is the explained component of the difference in mean log of earnings between men and women.

Some factors favoured women

Some factors worked in the opposite direction, diminishing the explained component. The women in the population were, on average, slightly older than the men and had more previous full-time work experience. The greater previous experience of women had the effect of decreasing the explained component by 9% in 1984 and 6% in 1987. Similarly, a much higher percentage of women worked in the public sector in both years. However, public sector employment was a strong equalizing factor in 1984, but worked to widen the explained component in 1987. In effect, the higher starting earnings in the public sector (favouring women) were soon eclipsed by faster earnings growth in the private sector (favouring men).

Residual earnings difference remains a puzzle

Although the model provides some interesting insights into the explained component of the earnings gap, it offers little in the way of explanation for the much larger residual component (Table 4). The size of the residual component is mainly due to much larger estimated age and sex coefficients for men than for women. But there is no clear reason why men should receive higher returns for age (particularly when employment experience is included as a control) or simply for being male. The non-specific nature of these variables leaves the residual difference in earnings open to a wide range of interpretations (several of which are discussed in *Discrimination and alternative explanations*).

Summary

This study focuses on the differences in earnings between men and women of a very select group – 1982 university graduates

who were employed full-time. With their identical educational backgrounds, and their similar age profiles and labour market experience, one would expect these individuals to have little or no earnings differential.

However, the data indicate that a sizable earnings gap exists between recent male and female university graduates and that the gap grows over time. Women's earnings averaged 88% of men's earnings in 1984, and by 1987 the ratio had fallen to 82%.

Although the earnings gap in this young, well-educated cohort is smaller than that found in the work force as a whole, female graduates earn less than their male counterparts in most fields and levels of study. Ph.D. holders are the exception to the rule – the average earnings of women and men with Ph.D's are equivalent, although the ratio varies considerably by field of study.

The decomposition model estimates that differences in the education and background of the 1982 university graduates explain only about one-third of the gap between female and male earnings. In other words, the model estimated that if men and women were rewarded equally for their education and other characteristics, men would have earned 5% more than women in 1984 and 7% more in 1987. But male graduates actually earned 15% more in 1984 and 22% more in 1987.

The results of this study raise as many questions as they answer. If the variables in the model do not adequately explain the remaining two-thirds of the earnings gap, then what does? What accounts for the growth in the earnings gap for this cohort? Is the gap shrinking for more recent graduating classes? Why is the earnings gap so much larger in less educated segments of the population? While the answers to these questions remain elusive, the increasingly important role of women in the work force merits their pursuit. □

Decomposition methodology

The "non-discriminatory" decomposition technique is a variant of a methodology that dates back to the 1950s and has appeared in economic, sociological and demographic literature (Cotton, 1988 and Gunderson, 1989).

Consider the following earnings equation:

$$\ln W = Xb + u,$$

where $\ln W$ is a vector of the natural log of yearly earnings for k individuals; X is a (k, j) matrix of k observed data values for j characteristics, b is a vector of j coefficients measuring returns to those explanatory variables and u is the error term. (The natural log of earnings is used so that the estimated coefficients approximate the proportionate effect on earnings of changes in the explanatory variables.) Using ordinary least squares (OLS), the earnings equation is estimated separately for men and women. The superscripts m and f identify the male and female estimated regression functions:

$$\ln \hat{W}^f = \hat{X}^f b^f$$

$$\ln \hat{W}^m = \hat{X}^m b^m.$$

One property of OLS estimators is that the product of the coefficients and sample means of the associated characteristics sum to the mean of the dependent variable, so that

$$\overline{\ln W^f} = \overline{X^f} b^f$$

$$\overline{\ln W^m} = \overline{X^m} b^m$$

The decomposition technique centres on the premise that the difference in mean earnings between women and men is a simple function of differences in the observed explanatory variable means and the estimated returns to these characteristics. Therefore, if men and women were to receive the same returns to their characteristics, the difference in earnings would be solely attributable to differing characteristics.

Cotton proposes that in the absence of differential rewards, the returns to attributes would fall somewhere between the respective returns for men and women. He suggests that "non-discriminatory" coefficients be estimated as the weighted average of the male and female coefficients. Therefore,

$$\delta^* = p^m \delta^m + p^f \delta^f,$$

where δ^* is the vector of non-discriminatory coefficients and p^m and p^f are the proportions of the total population that are male and female.

From the estimated regression functions, the difference in mean log earnings between men and women is decomposed into three terms:

$$\begin{aligned} \overline{\ln W^m} - \overline{\ln W^f} &= (\overline{X^m} - \overline{X^f}) \delta^* \\ &+ \overline{X^m} (\delta^m - \delta^*) \\ &+ \overline{X^f} (\delta^* - \delta^f). \end{aligned}$$

The first term represents the explained component of the earnings gap attributable to differing characteristics. The residual component, which is the proportion of the gap due to differing returns to characteristics, consists of a premium for the higher-paid group (the second term) and a penalty for the lower-paid group (the third term).

In the logarithmic form, the components are additive – the components sum to the difference in average log earnings – and symmetric (that is, if the male mean is subtracted from the female mean, the proportions remain the same and only the sign is reversed).

The differences of the logs can also be transformed back to earnings ratios (Table 4), such that:

$$\exp(\overline{\ln W^m}) / \exp(\overline{\ln W^f}) = Z_1 Z_2 Z_3,$$

where $\exp(\overline{\ln W^m})$ and $\exp(\overline{\ln W^f})$ are the male and female geometric mean earnings, and

$$Z_1 = \exp[(\overline{X^m} - \overline{X^f}) \delta^*]$$

$$Z_2 = \exp[\overline{X^m} (\delta^m - \delta^*)]$$

$$Z_3 = \exp[\overline{X^f} (\delta^* - \delta^f)].$$

Note that in this form the components are multiplicative: the ratio of the male to female mean is the product of the exponential transform of the components.

It is important to remember that the decomposition results are estimates subject to both specification error and measurement error. The results can be affected by unmeasured human capital characteristics or labour market decisions that are unrelated to income (such as individual preferences to work in a particular place or with certain people). Accordingly, decomposition cannot provide direct evidence of wage discrimination. On the other hand, it can suggest which characteristics might be differentially rewarded.

Discrimination and alternative explanations

How does one account for the residual differences in the earnings of male and female graduates? Are these differences evidence of discrimination, or are there alternative factors? Here, we consider three general classes of explanations for the residual difference: incomplete measurement of the dependent variable (income), omission of explanatory variables, and discrimination by employers.

Incomplete measurement of income

Earnings, as measured by the NGS and FOG, is just one component of the total income from any job. Total income, in its broadest sense, also includes both monetary and non-monetary benefits. Monetary benefits include such things as company contributions to pension plans, dental plans and supplemental medical plans. Non-monetary benefits are less easily defined or measured: for example, job satisfaction, geographic preferences, challenge or opportunities for advancement.

Unfortunately, the NGS and FOG contain no information on the monetary benefits received by respondents. Although it is unlikely that the distribution of such benefits would be so balanced in the favour of women as to significantly narrow the earnings gap, the different types of jobs held by men and women could allow for some small differences. If, for example, benefits were greater in the public sector than the private sector, the gap, as measured by earnings alone, might be slightly overestimated.

On the other hand, benefits tend to be correlated with earnings – workers with higher earnings generally receive greater benefits. Since men earn, on average, more than women, they may also receive greater benefits. Of course, without specific estimates of employment benefits, it is impossible to tell which factors would predominate in this population.

The issue of non-monetary rewards is closely linked to the notion of individual preferences. The income gap, in this line of argument, may be narrowed if women receive greater non-monetary returns, such as satisfaction, from their jobs. The NGS and FOG offer only inconclusive evidence in this area. Both surveys asked respondents to rate their overall satisfaction with their jobs and, more specifically, with their salaries. Men and women were equally satisfied with their jobs, indicating that women are probably not receiving greater non-monetary rewards than men. The salary satisfaction question did, however, show that slightly more women than men (22% compared with 19%) were dissatisfied with their salaries.

Omitted explanatory variables

The regression models that fed into the decomposition calculations accounted for 29% to 43% of the total variation in earnings of the graduates. Although such

measures compare favourably with most earnings models based on data at the respondent level, the fit of the model to the data might have been improved by including other earnings-related variables. But, to contribute to the explained proportion of the earnings gap, either men or women would need to have appreciably more of this unobserved characteristic. This requirement appears to rule out many possibilities.

Inherent ability, for example, is often cited as a possible source of unexplained variance in earnings models. Regardless of the problems of defining or measuring such a concept, it doesn't seem a very reasonable proposition that such a characteristic should be unequally distributed between men and women. This is particularly true if very specific education controls are already in the model.

On the other hand, occupation is one earnings-related characteristic in which men and women differ significantly. Male graduates tend to enter higher-paying occupations than female graduates, even within a given field of study (Wannell, 1989). Occupation (or industry) could have been included among the control variables. In fact, when the 1987 decomposition calculations were repeated for a model containing 15 occupation and 12 industry dummy variables, the explained component of the earnings gap rose from 35% to 47%. Clearly, men and women with similar qualifications are getting different types of jobs. However, as noted earlier, the matching of male and female graduates to first jobs could involve discriminatory processes as well as individual preferences. The identification and separation of these demand- and supply-side factors is discussed below.

Demand-side discrimination

Sex discrimination by employers can be classified into two basic forms: hiring and advancement selection based on sex; and differential pay for the same work. Each form of discrimination presents its own problems to researchers. The existence of hiring and advancement selection has stronger theoretical underpinnings and seems to fit NGS and FOG data. However, employer selection is so functionally and theoretically similar to self-selection (individual preferences) that it is virtually impossible to distinguish the two. On the other hand, unequal pay for the same work does not have strong theoretical support, is probably identifiable only with a case study format and may be difficult to isolate from selection effects.

At the risk of oversimplification, most theoretical discussions of hiring and advancement selection boil down to "statistical discrimination". (For a longer, more general discussion of statistical discrimination, see Thurow, 1975.) To summarize this argument, women are more likely to interrupt their working careers for marriage and child care than men. Employers prefer "career-track" employees, who do not have short or frequently interrupted careers. Since employers cannot readily

determine at the time of hiring which women will have short or interrupted careers, according to this hypothesis hiring or advancing a man is a better bet – particularly in jobs that require significant on-the-job training and career development, all other considerations being equal. Although this type of discrimination has traditionally been illustrated by the shunting of women to "pink-collar ghettos" such as clerical work, it is not necessarily that categorical. Enough leeway exists within most highly qualified occupations for some stratification by sex to occur. But at this level the distinction between discrimination and self-selection is not always clear.

Human capital theory suggests that women who plan to have short or interrupted careers would favour jobs that have relatively short periods of on-the-job training and offer little penalty for time spent out of the labour force. Trade-offs may exist within most occupations whereby some jobs can be exited and re-entered relatively easily, but with some pay or benefit penalties. The self-selection of different occupational streams reinforces the earnings gap, but is not normally labelled discrimination.

Of course the distinction between discrimination and self-selection is blurred by other factors such as childhood instruction in male and female roles and the expectation of discrimination in some occupations. All of which makes it very difficult to clearly identify hiring and advancement discrimination.

The issue of earnings differentials for essentially the same duties is even more difficult to assess. In

addition to the problems with theoretical arguments, this phenomenon simply cannot be measured with normal survey microdata. There are two main reasons for this. The first involves sampling ratios. Surveys typically sample only a small proportion of the population, therefore making it highly unlikely that men and women with similar qualifications doing similar jobs at the same firm could be identified. Even though the NGS and FOG provide many controls for qualification and experience and have a very low sampling ratio, the jobs held by the graduates represent a minute fraction of all jobs in the labour market. Even if a few matches could be found (from which no statistical inferences could be drawn), the second problem, occupation coding, would come into play.

Canadian microdata sources – the NGS and FOG included – at best contain occupational information coded at the Standard Occupation Classification four-digit level (*Standard Occupational Classification 1980*, Statistics Canada Cat. 12-565E). This means that the entire range of jobs in Canada is summarized into less than 500 categories. Obviously, jobs within categories cannot be entirely homogenous at this level. If homogenous jobs cannot be identified, then unequal pay for the same job cannot be measured.

Furthermore, job titles may be a source of discrimination. It is possible that essentially similar job duties may be given different titles or descriptions for men and women (Bielby and Baron, 1986). Focused case studies may provide some insights, but create different problems.

Notes

¹ The graduates of community colleges and vocational and trade programs were also surveyed but are not included in this report for two reasons. First, the entrance requirements vary greatly, thus the graduates are a much less homogenous group with respect to age, years of education and academic skills. Second, trade and vocational (and, to a lesser extent, community college) programs are so stratified by sex that comparisons between men and women are subject to high sampling variability (due to small numbers in the minority group). A longer version of this paper includes analyses of the earnings gap among community college graduates and is available, on request, from the author.

² One might expect a drop in the female to male earnings ratio between 1984 and 1987 if women worked less than men – for example, as a result of higher part-time employment rates and periods spent on maternity leave. However, the corresponding ratios for the sample consisting of those employed full-time at each of five separate time points were 86% in 1984 and 81% in 1987. It is thus unlikely that the increase in the earnings gap between men and women is an artifact of a less experienced female work force in 1987.

³ The earnings ratio for full-time, full-year workers the same age as the 1982 graduates is based on a hypothetical work force with the same age distribution as the 1982 graduates. Age-weighted average earnings are calculated by multiplying the average earnings for a particular age group (from *Earnings of Men and Women*, Statistics Canada Cat. 13-217) by the proportion of graduates in that age group and summing across age groups. Age-weighting the full-time, full-year work force tends to narrow the earnings gap because wages of men and women are closer together in the younger age groups, which contain the majority of graduates.

⁴ First professional degrees are included in the undergraduate degree category. The master's level includes graduate level certificates and diplomas.

⁵ These time points are January 1983, October 1983, June 1984, January 1986 and March 1987. This restriction may create a sample selection bias. For example, those with lower wage-related characteristics or less than adequate returns to their characteristics will be less likely to enter the full-time labour market.

Notes – Concluded

If this affects women more than men, it results in an upward bias on the observed earnings for women and, therefore, a downward bias on the earnings gap.

⁶ Since some variables can have the opposite effect to the overall trend (that is, they favour women), the

absolute sum of differences can easily exceed the net sum of differences. The subtotal of 133% for fields of study in 1984 indicates that net of field of study, women had "better" wage-generating characteristics than men (for example, higher average age and more public sector employment).

References

- Belman, D. and J.S. Heywood. "Government Wage Differentials: A Sample Selection Approach," *Applied Economics*, Vol. 21, No. 4. London, G.B., 1989, pp. 427-438.
- Bielby, W.T. and J.N. Baron. "Men and Women at Work: Sex Segregation and Statistical Discrimination," *American Journal of Sociology*, Vol. 91, No. 4. Chicago, January 1986, pp. 759-799.
- Clark, W., M. Laing and E. Rehnitzner. *The Class of 82*. Ottawa: Secretary of State and Statistics Canada, 1986.
- Cotton, J. "On the Decomposition of Wage Differentials," *Review of Economics and Statistics*, Vol. LXX, No. 2. Amsterdam, 1988, pp. 236-243.
- England, P. "The Failure of Human Capital Theory to Explain Occupational Sex Segregation," *Journal of Human Resources*, Vol. XVII, No. 3. Wisconsin, 1982, pp. 358-370.
- Finney, R. *The Gender Wage Gap and Job Experience in a Simultaneous Equations Framework: A Look at Younger Workers*. Presented at the 23rd Annual Meeting of the Canadian Economics Association, Quebec, June 1989. Mimeo.
- Fishback, P.V. and J.V. Terza. "Are Estimates of Sex Discrimination by Employers Robust? The Use of Never-Marrieds," *Economic Inquiry*, Vol. XXVII, No. 2. Chicago, 1989, pp. 271-285.
- Glass, J., M. Tienda and S.A. Smith. "The Impact of Changing Employment Opportunity on Gender and Ethnic Earnings Inequality," *Social Science Research*, Vol. 17, No. 3. San Diego, 1988, pp. 252-276.
- Gunderson, M. "Male-Female Wage Differentials and Policy Responses," *Journal of Economic Literature*, Vol. XXVII, No. 1. Nashville, March 1989, pp. 46-72.
- Heckman, J.J. "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models," *Annals of Economic and Social Measurement*, Vol. 5, No. 4. New York, 1976, pp. 475-492.
- Jackson, J.D. and J.T. Lindley. "Measuring the Extent of Wage Discrimination: A Statistical Test and a Caveat," *Applied Economics*, Vol. 31, No. 4. London, G.B., April 1989, pp. 515-540.
- Jones, F.L. "On Decomposing the Wage Gap: A Critical Comment on Blinder's Method," *Journal of Human Resources*, Vol. XVIII, No. 1. Wisconsin, 1983, pp. 126-130.
- Mincer, J. and S. Polachek. "Family Investments in Human Capital: Earnings of Women," *Journal of Political Economy*, Vol. 82. Chicago, 1974, pp. S76-S108.
- Mincer, J. and S. Polachek. "Women's Earnings Reexamined," *Journal of Human Resources*, Vol. XIII, No. 1. Wisconsin, 1978, pp. 118-134.
- Reimers, C.W. "Labour Market Discrimination Against Hispanic and Black Men," *Review of Economic and Statistics*, Vol. LXV, No. 4. Amsterdam, 1983, pp. 570-579.
- Robb, R.E. "Earnings Differentials Between Males and Females in Ontario, 1971," *Canadian Journal of Economics*, Vol. 11. Toronto, 1978, pp. 350-359.
- Statistics Canada. *Follow-up of Graduates: Survey Methodology Report and User's Guide*, Cat. 12-001. Ottawa, March 1989.
- Statistics Canada. "The Class of 82 Revisited," *Education Statistics Bulletin*, Cat. 81-002, Vol. 11, No. 1. Ottawa, February 1989.
- Thurow, L.C. *Generating Inequality: Mechanisms of Distribution in the United States Economy*. New York: Basic Books, 1975.
- Wannell, T. *The Persistent Gap: Exploring the Earnings Differential Between Recent Male and Female Postsecondary Graduates*, Research Paper Series, No. 26. Ottawa: Statistics Canada, Analytical Studies Branch, 1989.

Work and relative poverty

John M. Evans and Raj K. Chawla

Many families have low incomes despite their members working a great number of hours. For example, in Canada roughly 117,000 married couple families with children have a low income even though their members collectively work the equivalent of a full-year, full-time job. Of course, families like this, often referred to in the media as the "working poor", are not the only ones failing to secure adequate incomes from the labour market. Some families look for work without finding any at all (Chawla, 1984). Nevertheless, the so-called "working poor" are an important group to study, for at least two reasons.

First, as in several other countries, Canada's labour force development strategy is moving away from passive income maintenance towards active employment measures (OECD, 1988; EIC, 1989). In other words, there is increased emphasis on ensuring that families obtain adequate income from employment, as opposed to government transfer payments, and on devising tax/transfer schemes that preserve work incentives.¹

Second, many newly created jobs in the service sector, especially those held by

young people, seem to be less able to meet a family's income needs (Myles et al., 1988). These jobs tend to be relatively low paying and are often of short duration – characteristics associated with lower annual earnings.

Statistics Canada has no definition of the "working poor", but there are many definitions in the literature, reflecting that the terms "working" and "poor" mean different things to different people. The first part of this article describes the basic concepts involved and compares some of these definitions, which turn out to be very different. Rather than propose another such definition, the second part of the article tackles the basic question, "What are the work patterns of low income families?"

What is meant by "working poor"?

While Statistics Canada has no definition of the "working poor", several recent studies have concluded that they are a substantial number of people. However, the precise figures depend on the definition. For example, a report to the Ontario Ministry of Community and Social Services (1988, p. 65) stressed that most low income families receive the bulk of their incomes from earnings, as opposed to social benefits or other sources of income. On the other hand, Ross and Shillington (1989, Table 6.1) estimate that "working poor" families account for about 30% of "poor" families.

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Statistics Canada low income cut-offs

Low income cut-offs (LICOs) are income levels designed to identify the low income population. Families and unattached individuals with incomes under the LICOs are deemed to have low incomes. The LICOs are set at the levels where, on average, families spend a significantly higher proportion of their incomes on necessities than Canadian families as a whole. These cut-offs are defined for families, as opposed to persons, because income is assumed to be shared within families. Unless a person lives alone, his or her standard of living depends on how many other people live in the family and on their combined income.

Low income cut-offs are at best only rough indicators of "poverty", which is an imprecise and complex concept. Not all families with incomes under the LICOs necessarily find it difficult to make ends meet. Conversely, some families with incomes above the LICOs are still hard-pressed financially.

The current set of LICOs consists of 35 different income cut-offs, which correspond to 35 different types of families. Separate cut-offs are calculated for families of one (an unattached individual) to seven or more, and for families living in different types of urban and rural areas. The base year for the LICOs used in this paper was 1978. Since then they have been updated regularly in line with inflation, as shown by the Consumer Price Index.

The basic steps involved in the calculation of the 1978-based LICOs used in this paper are as follows:

- (1) Estimate the proportion of income spent, on average, by all families and unattached individuals on food, shelter and clothing, using Family Expenditure Survey data. (In 1978, this proportion was 38.5%.)
- (2) Add an arbitrary 20 percentage points to this figure (raising the above proportion to 58.5%).
- (3) Using income data, also collected in the Family Expenditure Survey, estimate the average income levels at which families spend 58.5% of their income on food, shelter and clothing, by family size and type of area. These are the LICOs for 1978.
- (4) Multiply these 1978 LICOs by the change in the Consumer Price Index to arrive at the LICOs for other years.

The larger the family, the higher the LICOs. Other things being equal, larger families need more income to reach the same standard of living. LICOs also rise with the population of the area in which the family lives, reflecting the higher proportion of income spent on food, shelter and clothing in bigger cities.

The LICO method is currently under review and may eventually be supplemented or replaced. Full details on the present construction of LICOs can be found in *Rebasing Low Income Cut-offs to 1978* (Statistics Canada, 1983), available from Roger Love at (613) 951-6898.

Low income cut-offs for 1981 and 1988 (1978-based)*

Year	Number of persons in the family						
	One	Two	Three	Four	Five	Six	Seven or more
	\$						
1981	7,200	9,400	12,600	14,500	16,800	18,400	20,300
1988	10,300	13,500	18,100	20,900	24,200	26,400	29,200

Source: Survey of Consumer Finances

* For families living in an urban area with a population from 30,000 to 99,999. Figures are rounded to the nearest \$100.

The development of a practical definition requires judgement calls on three basic issues revolving around the concepts of "poverty" and "working". The first is the definition of the "poor" population. All the Canadian studies examined here resolve this by adopting the Statistics Canada LICOs (see *Statistics Canada low income cut-offs*),

despite the fact that these cut-offs are designed only as indicators of low incomes, rather than "poverty". The LICOs are based on the family, which means that, apart from unattached individuals, it is only possible to say a person has low income if he or she lives in a family with low income.

The second issue to settle is the definition of the "working" population. This tends to clash with the definition of low income, because in modern society it is individual persons who are considered to be working, not families. All usual statistical definitions, such as those used in Statistics Canada's Labour Force Survey, are based on the individual person. However, it is possible to think of "working families" in the sense of families whose members collectively work more than a certain minimum amount, and this is the approach taken in many of the definitions. Some studies measure work in terms of hours of work over the year, others in terms of the amount of earnings from employment.

The third issue is the way the two criteria are combined. All but one of the Canadian studies resolve this by defining "working poor families" as those having total incomes below the appropriate LICO, and collectively working or earning more than a minimum amount over the year. This definition implicitly assumes that families make collective decisions about allocating time to employment, as well as sharing their incomes.

Now, for many purposes, what is needed are data on individual persons, not families. For example, person-based data are needed to evaluate training programs designed to improve family incomes by raising the employment incomes of individuals. For this reason, the Canadian study by Gunderson et al.² and the U.S. study by Klein and Rones³ define the "working poor" directly in terms of persons. In their studies, the "working poor" are persons working more than a certain minimum amount but living in low income families.

However, even with this person-based approach, the interpretation of the figures still depends on family circumstances. People counted as "working poor" will owe their status to three criteria: first, their own

Some definitions of the "working poor"

Although Statistics Canada has no definition of the "working poor", many definitions exist in the literature. All of them combine two criteria: one which defines the "poor" population and another which defines the "working" population. The "working poor" are those who are in both the poor and the working populations. They may be either families or individuals.

In Canada:

All four Canadian definitions of the "working poor" listed below use the Statistics Canada LICOs to define families "in poverty", or, more correctly, "having low incomes". However, the definition of "working" varies considerably:

- low income *families* whose head was in the labour force (that is, employed or unemployed) at the time of the survey (Ross, 1981);⁴
- low income *families* whose adult members work a total of at least 49 weeks (full- or part-time) during the year (Ross and Shillington, 1989);
- low income *families* with at least 50% of their total income coming from employment (National Council of Welfare, 1981; Ontario Ministry of Community and Social Services, 1988);
- *persons* living in low income families who did any work during the year (Gunderson et al., 1990).

In the United States:

In the United States, the definitions of "poor" usually refer to the official U.S. poverty lines, which are not at all comparable to the Canadian LICOs. However, in the U.S. studies quoted below, the definitions of "poor" and "working" both vary:

- *households* with heads earning under \$204 per week (in 1984 U.S. dollars) – excluding persons aged 65 and over, disabled persons, students and women with at least one child under age six (Danziger and Gottschalk, 1986);
- *persons* in families with incomes under the U.S. poverty line who spend at least half the year in the labour force (Klein and Rones, 1989);
- *persons* with annual earnings under \$4,500 (in 1967 U.S. dollars), working at least 30 hours a week and 40 weeks a year (Bluestone et al., 1973).

earnings; second, the size and composition of their family and; third, the income of the family from all other sources. As a result, it

is quite possible for one person classified as "working poor" to put in more hours of work and earn more than a second person not classified as "working poor". In addition, people with high-earning spouses can never be counted as "working poor".⁵

Even when the basic concepts have been determined, the estimated number of the "working poor" is always sensitive to changes in the minimum level of annual hours or earnings incorporated in the "working" criterion. This clearly emerges from the analysis of the working patterns of low income families outlined in the second part of this article. In addition, the composition of the "working poor" varies as well. When the "working" criterion limit is raised to 1,900 hours a year from 1,000 hours a year, married couple families account for a higher proportion of the "working poor" (53% versus 41% in 1988), and the share of unattached individuals and lone parent families falls (to 34% from 44% and to 10% from 12%, respectively).⁶

Work patterns of low income families

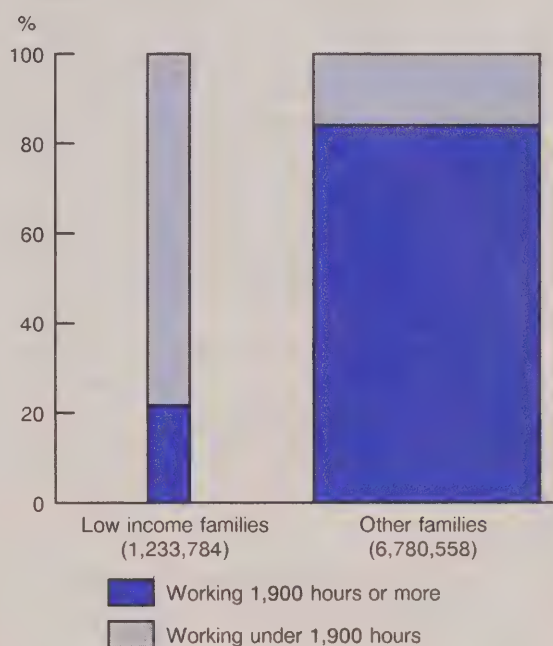
Underlying all these studies of the "working poor" is a concern to understand the work patterns of the low income population. This section concentrates on working families with incomes below the Statistics Canada LICOs.⁷

In keeping with most studies on the "working poor", unattached individuals over the age of 65 and families with heads aged 65 and over are excluded, because the elderly are not expected to work to make a living. (In any case, few people aged 65 and over spend much of their time in paid employment.) For the same reason, also excluded are families headed by persons who declare themselves unable to work over the year. On the other hand, unattached individuals or family heads who are ill or disabled, but can work with some

limitations, are included, despite any restrictions in the amount of work they can do.⁸

Relationship between employment and low income

About one in five low income families work the equivalent of a full-year, full time job.



Source: Survey of Consumer Finances

By far the majority of non-elderly low income families, including unattached individuals, reported that one or more of their members had been employed at some time in 1988.⁹ Some of these families had worked very few hours, but almost two-thirds of the low income families reported a total of at least 40 hours over the year – the equivalent of one week of full-time work. Just over one-third had worked at least 1,000 hours. One-fifth had worked 1,900 hours or more, representing roughly one full year of full-time employment (Table 1).¹⁰ (Of course, these proportions are lower than the

corresponding proportions for families and unattached individuals with incomes above

the LICO. For example, 83% of this group worked 1,900 hours or more in 1988.)

Table 1
Annual hours worked by low income families, 1988

	Proportion of low income families			
	Working at least:			With heads working full-time, full-year*
	40 hours	1,000 hours	1,900 hours	
	%			
Total low income families	66	38	22	20
Married couple families	78	59	44	35
Without children under 18	61	43	26	19
With one child under 18	88	61	46	32
With two children under 18	83	70	53	47
With three or more children under 18	89	68	56	48
Lone parent families	52	23	11	12
With one child under 18	51	24	10	11
With two or more children under 18	50	19	8	11
Unattached individuals	65	32	14	17

Source: Survey of Consumer Finances

* Equivalent to 1,900 hours per year.

Table 2
Earnings of low income families, 1988

	Proportion of low income families			
	Earning at least:			With family employment earnings accounting for over 50% of income
	25% of LICO	50% of LICO	75% of LICO	
	%			
Total low income families	48	29	11	47
Married couple families	60	40	16	56
Without children under 18	47	32	14	47
With one child under 18	65	39	18	58
With two children under 18	66	50	25	63
With three or more children under 18	66	41	8	61
Lone parent families	27	13	5	24
With one child under 18	28	13	5	25
With two or more children under 18	24	10	4	21
Unattached individuals	50	29	11	52

Source: Survey of Consumer Finances

Regarding their income from employment, only 29% of low income families, including unattached individuals, reported earnings of 50% or more of the LICO applying to a family of their size and area type. One in nine had earned 75% of the LICO (Table 2).

Generally, families with more adults of working age and fewer dependants are potentially better-placed to engage in employment. Thus, it is not surprising that the data show that low income married couple families report more employment hours and higher earnings than unattached individuals or lone parent families.

Lone parent families with low incomes also report less employment than unattached individuals. And those with two or more children under 18 years work less and earn less than those with only one child. This is understandable since lone parents often face the double burden of raising children and providing employment income on their own. The more children they have, the more difficult it is for lone parents to engage in paid employment.

On the other hand, low income married couple families with children under 18 years report more employment hours than similar families with no children; the more children they have, the more likely they are to report working at least 1,900 hours. Part of the reason for this is that family composition changes at different stages in the life cycle. Married couples without children are often young people beginning their lives together or "empty nesters". In both cases they will tend to have relatively low levels of employment earnings. But when children are present, each one adds to the family's income needs. The rising level of employment for the larger families reflects this. However, the extra employment income often fails to match the extra needs. In general, the income of the larger families is much more likely to be low (Table 3).

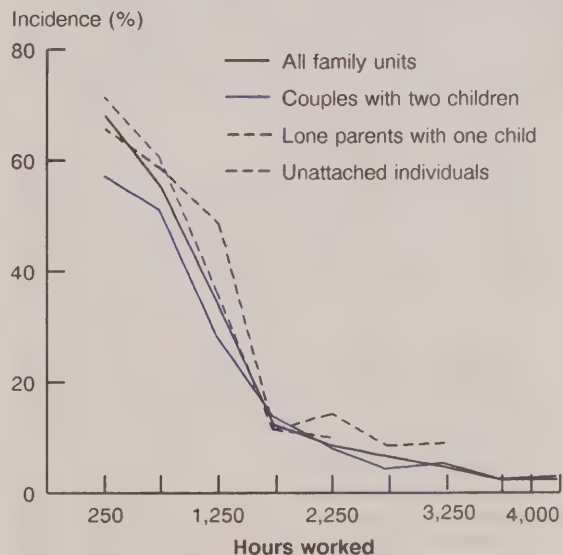
Despite the effects of the 1981-82 recession, and the subsequent recovery, the broad picture in 1988 was very similar to 1981, except for a slight drop in the proportion of low income families working at least 1,000 hours and at least 1,900 hours (Table 4).

The more work performed, the less likely family incomes are to be low

Although some families receive low incomes despite working a substantial number of hours, in general, the more families work, the less likely their incomes are to be low. In fact, the proportion of families with low incomes falls continuously as the number of annual hours worked increases. Combining all families and unattached individuals, the

Incidence of low income by hours worked, 1988

The more a family works, the less likely it is to have a low income.



Source: Survey of Consumer Finances

Table 3
Composition of low income families, 1988*

	Number of families	Number of persons	Incidence of low income
	'000	'000	%
Total low income families†	1,234	2,578	15
Married couple families	324	1,185	6
Without children under 18	100	227	5
With one child under 18	68	217	6
With two children under 18	88	359	7
With three or more children under 18	69	382	13
Lone parent families††	243	672	40
With one child under 18	102	213	42
With two or more children under 18	114	401	58
Unattached individuals	634	634	29

Source: Survey of Consumer Finances

* Using 1978-based LICOs; excludes families with heads aged 65 and over and/or who are permanently unable to work.

† Includes family types not shown here (e.g. siblings living together).

†† Includes lone parent families with children 18 years and over.

Table 4
Change over time in the proportion of
low income families, 1981 and 1988*

	1981	1988
	%	
Low income families as a proportion of all families	15	15
Married couple families	7	6
Lone parent families	39	40
Unattached individuals	28	29
Proportion of low income families working 1,000 hours or more	43	38
Married couple families	68	59
Lone parent families	24	23
Unattached individuals	33	32
Proportion of low income families working 1,900 hours or more	26	22
Married couple families	50	44
Lone parent families	11	11
Unattached individuals	15	14

Source: Survey of Consumer Finances

* Using 1978-based LICOs; excludes families with heads aged 65 and over and/or who are permanently disabled.

probability of having a low income falls steeply from two-thirds for families working under 500 hours, to one-third for families working 1,000 to 1,499 hours. The probability further drops to one-eighth for those working 1,500 to 1,999 hours. This illustrates the sensitivity of the definition of "working poor" to the criterion used to define "working". A slight increase in the minimum number of hours required to be classified as "working" results in a significant decrease in the incidence of low income and hence a significant decrease in the measured number of "working poor".

The incidence of low income is minimal for families working many hours, a situation possible only when two or more earners are present. Only 1% of married couple families with two children under 18 years were working around 4,000 hours annually in 1988 (the equivalent of at least two full-time, full-year jobs) and earning incomes under the LICO. To illustrate how such a situation could occur, assume a

married couple both work full-time throughout the year and each person earns \$4.50 an hour. They also have two children. The family's gross annual employment income, at about \$18,000, is well below the LICO for a four-person family (\$20,900).¹¹

Conclusion

Most low income families and unattached individuals are employed at some time during the year. Some work a substantial number of hours but remain in the low income zone. Families find themselves with low incomes for a large number of reasons such as low wage rates and difficulties in obtaining enough work (for example, lack of full-year employment in seasonal occupa-

tions, lack of child care facilities). Their position in the life cycle is another contributing factor, as is family size and composition, and the incomes of other family members.

The number and complexity of these issues is reflected in the lack of any single, well-accepted definition of the "working poor" in Canada. The range of definitions used in the current literature is wide and, as a result, the "working poor" population of one study may be very different from the "working poor" population of another. Nevertheless, many policy issues can only be resolved in the light of a thorough knowledge of the working patterns of those in and on the margins of the low income population. □

Notes

¹ One recent example is Quebec's "apport" scheme, which provides income support to working families tied to the level of welfare benefits.

² Gunderson, Muszynski and Keck use the "person" approach because they are focusing on "working poor" women.

³ Klein and Ronces include both the employed and the unemployed.

⁴ Strictly speaking, Ross (1981) first makes a distinction between the "working poor" and the "wage-earning poor" to stress that by no means all "work" is paid. He provides statistics for the "wage-earning poor", defined as poor families whose heads were in the labour force at the time the income data were gathered.

⁵ For example, consider two families living in a city with a population of 50,000, the first a married couple living alone and the second a married couple with three dependent children. Suppose that, in both cases, total family income is derived solely from the earnings of the husband and this income is \$15,000 for the married couple living alone and \$20,000 for the married couple with three children. Because the LICO for a two-person family is \$13,500, compared with \$24,200 for a five-person family, only the larger family will be counted as having low income. Thus, only the husband in the larger family can be counted as "working poor", even though he has the higher earnings.

If both wives subsequently decide to work, only the second wife can be counted as "working poor", and then only if her hours are low enough for the family to remain in the low income zone.

The difficulties of defining the "working poor" directly in terms of persons is avoided by Bluestone et al., who define the "working poor" simply as persons with low earnings. For a discussion on workers with low earnings, see a recent study by Akyeampong (1989).

⁶ It can be argued that it might be better to use different criteria for different family types. For example, if a definition based on 1,900 hours, representing one year of full-time work, were used for married couple families, a lower limit might be applied to lone parent families and unattached individuals.

⁷ The term "family" refers to a group of two or more individuals who share a common dwelling unit and are related by blood, marriage or adoption. A one-person family is usually referred to as an unattached individual.

⁸ The 1986 Health and Activity Limitation Survey found that, out of 15 million Canadians aged 15-64 living in private households, 1.3 million considered themselves to be limited at work because of a disability. Detailed questions on disability are not included in the Survey of Consumer Finances, from which the data in this article are generally taken.

Notes – Concluded

⁹ Income and employment data were obtained from the Survey of Consumer Finances (SCF) and the Labour Force Survey (LFS). The SCF collects general information on employment patterns and income over the previous year, while the LFS provides detailed information on employment during the previous week. Neither survey contains a question asking for annual hours worked. This information was derived by multiplying the usual hours worked in the current job by the number of weeks worked in the previous year.

¹⁰ The figure of 1,900 is designed to represent roughly the number of hours worked per year in a full-time job (including paid holidays and other paid leave). It is approximately equal to a 40 hour workweek, 47 weeks a year or, alternatively, a 37.5 hour workweek, 52 weeks a year. (It is reasonable to assume that some people would be working less than 40 hours weekly in a full-time job and/or less than 52 weeks a year in a full-year job.)

¹¹ Their total income would be higher than \$18,000, because of social transfers such as family allowances.

References

Akyeampong, E.B. "Working for Minimum Wage," *Perspectives on Labour and Income*, Cat. 75-001E. Ottawa, Winter 1989, pp. 8-20.

Bluestone, B., W.M. Murphy and M. Stevenson. *Low Wages and the Working Poor*. Ann Arbor, Michigan: The Institute of Labor and Industrial Relations, July 1973.

Chawla, R.K. "Link Between Economic Hardship and Labour Market Problems in Canada," *The Labour Force*, Cat. 71-001. Ottawa, February 1984, pp. 91-120.

Cohen, G.L. *Disability and the Labour Market: An Analysis of Disabled Persons Not in the Labour Force*. Ottawa: Statistics Canada, May 1989.

Cohen, G.L. "Disabled Workers," *Perspectives on Labour and Income*, Cat. 75-001E. Ottawa, Winter 1989, pp. 31-38.

Danziger, S. and P. Gottschalk. "Work, Poverty and the Working Poor: A Multifaceted Problem," *Monthly Labor Review*. Washington, D.C., September 1986.

Employment and Immigration Canada. *Success in the Works: A Profile of Canada's Emerging Workforce*. Ottawa, April 1989, p. 8.

Gunderson, M., L. Muszynski and J. Keck. *Broke But Not Broken: Women and Labour Market Poverty*. Ottawa: Canadian Advisory Council on the Status of Women, 1990.

Klein, B.W. and P.L. Rones. "A Profile of the Working Poor," *Monthly Labor Review*. Washington, D.C., October 1989.

Myles, J., G. Picot and T. Wannell. "The Changing Wage Distribution of Jobs, 1981-1986," *The Labour Force*, Cat. 71-001. Ottawa, October 1988, pp. 83-138.

National Council of Welfare Canada. *The Working Poor: People and Programs: A Statistical Profile*. Ottawa, March 1981.

Ontario Social Assistance Review Committee. "Report of the Social Assistance Review Committee," *Transitions*. Toronto, 1988.

Organisation for Economic Co-operation and Development. *OECD Employment Outlook*. Paris, September 1988, pp. 7-12.

Ross, D.P. *The Working Poor: Wage Earners and the Failure of Income Security Policies*. Toronto: Canadian Institute for Economic Policy, 1981.

Ross, D.P. and E.R. Shillington. *The Canadian Fact Book on Poverty, 1989*. Ottawa: Canadian Council on Social Development, 1989.

Statistics Canada. *Rebasing Low Income Cut-offs to 1978*, Technical Reference Paper. Ottawa, September 1983.

The gift of time

Henry Pold

From blood donor clinics to the ski slopes, from hospital wards to school gymnasiums, from distress centres to rural firehalls – volunteers enrich society.

In 1987, Canada benefited from the efforts of more than five million unpaid workers doing over nine million volunteer jobs. These volunteers "worked" over one billion hours (an average of about two hours a week per job) over the 12-month period from November 1986 to October 1987. This was equivalent to more than 500,000 full-time, full-year jobs.¹ If these jobs had paid even the minimum wage, they would have required a payroll of more than \$75 million a week.

Volunteers are involved in social welfare and health activities, artistic and cultural programs, sports and leisure activities, environmental protection, international relations and living conditions, social advocacy, politics, and even law and justice. This article looks at the different kinds of organizations that rely on volunteers and profiles the individuals who offer their time and energy in unpaid work.

Volunteer organizations

What kinds of organizations depend on volunteer labour? The top three are reli-

gious organizations; leisure, recreation and sports organizations; and education and youth development organizations. Together they accounted for almost one-half of all volunteer jobs in 1987.

Almost one-quarter of male volunteers were in the recreation field. Religion and education together accounted for another quarter of the jobs performed by men. Women were most likely to volunteer for religious organizations, accounting for one-fifth of all jobs held by women. Next were education organizations, followed by health organizations; combined, these two areas accounted for almost one-third of the volunteer jobs taken by women.

Volunteer activities

Volunteer jobs cover a wide range of activities, although some are more organization-specific than others.² For example, helping in a religious service was most common in religious organizations, while coaching, refereeing and judging were strongly associated with leisure, sports and recreation organizations. Overall however, the largest number of volunteer jobs involved fundraising (38%), providing information (36%), and organizing, supervising and coordinating activities (35%).

Although most activities were equitably shared by men and women, some stereotypical differences are apparent. More than a quarter of the women prepared

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The Survey of Volunteer Activity

Although their impact is great, the amount of information about volunteers is small. To obtain more extensive data, the Department of the Secretary of State sponsored the Survey of Volunteer Activity as a supplement to Statistics Canada's monthly Labour Force Survey. Conducted in October 1987, the Survey of Volunteer Activity identified persons who had volunteered for an organization at some time between November 1986 and October 1987 inclusive. Those who reported volunteering were then requested to complete a follow-up questionnaire that asked for detailed information on up to three organizations volunteered for.

For analytical purposes, each organization reported on in the survey constitutes one "volunteer job", regardless of the frequency or duration of volunteering. Persons who volunteered for two (or more) organizations are considered to have performed two (or three) volunteer jobs. Altogether, 5.3 million volunteers reported on 9.2 million jobs (Table 1).

This article presents an overview of the results from the second phase, completed in January 1988. It focuses on volunteer jobs, which are examined according to the various characteristics of the persons performing them (for example, the proportion of jobs held by married women). However, for convenience, the text frequently refers to "volunteers" instead of "jobs held by volunteers". For example, a statement such as "6% of male volunteers served health organizations" should be taken to mean "6% of jobs held by male volunteers were in health organizations". In other words, volunteers are counted as many times as they have jobs, up to a maximum of three times.

Table 1
Volunteers and volunteer jobs

	Volunteers	Volunteer jobs
	'000	
Number of organizations served:		
Total	5,337	9,179
One organization only	2,655	2,655
Two organizations only	1,523	3,046
Three organizations only	797	2,390
Four or more organizations	363	1,088*

Source: Survey of Volunteer Activity

* Information was collected for only three organizations.

or served food, but only about one-tenth of the men contributed in this way. On the other hand, 17% of the men repaired, maintained or built facilities, compared with 4% of the women. Although women were more likely to make items (18% versus 5%), men were more involved with coaching, refereeing and judging (20% versus 7%). Another area of difference was in board membership: one-third of the men sat on boards of directors, compared with only about one-fifth of the women.

Who volunteers?

By sex

Although women do hold the majority of volunteer jobs, it is a small majority. Overall, 57% of volunteer jobs were filled by women and 43% by men. But some types of organizations attracted quite different proportions of men and women, reflecting some traditional patterns. Organizations in the health, religious and international fields had much higher proportions of women. For example, three-quarters of volunteer jobs in health and two-thirds of those in religious organizations were taken by women. On the other hand over 60% of volunteers in sports and recreation and in economic organizations were men.

By age

Volunteers are not, as one might think, primarily middle-aged or retired. Almost one-half of all volunteers were aged 25 to 44, just over one-quarter were 45 to 64 and the remainder were divided between those 15 to 24 or over 64. In education and youth development, almost two-thirds of the jobs were handled by 25-44 year-olds, as were three-fifths of the jobs in leisure, recreation and sports. The 65 and over group were responsible for nearly one-fifth of the positions in the social services (care and support) field.

Table 2
Volunteer profile

	'000	%
Total volunteer jobs held	9,179	100
By sex		
Men	3,934	43
Women	5,245	57
By age		
15-24	1,080	12
25-44	4,492	49
45-64	2,577	28
65 and over	1,029	11
By marital status		
Married	6,734	73
Single (never married)	1,558	17
Other	887	10
By education		
No secondary education	716	8
Some or completed high school	4,029	44
Some postsecondary education	893	10
Postsecondary certificate or diploma	1,580	17
University degree	1,960	21
By household income		
Less than \$10,000	430	5
\$10,000 - \$19,999	1,181	13
\$20,000 - \$29,999	1,223	13
\$30,000 - \$39,999	1,839	20
\$40,000 - \$59,999	1,948	21
\$60,000 or more	1,293	14
Not stated	1,266	14
By labour force status		
Employed (in a paid job)	5,848	64
Unemployed	396	4
Not in the labour force	2,934	32
By selected activities*		
Fundraising	3,521	38
Recruiting	2,192	24
Teaching	2,023	22
Coaching	1,140	12
Providing information	3,338	36
Promoting ideas	1,983	22
Providing care	1,499	16
Preparing/serving food	1,871	20
Making items	1,180	13
Selling items	1,516	17
Organizing events	3,179	35
Board member	2,378	26

Source: Survey of Volunteer Activity

* Volunteers usually reported several activities.

By marital status

Most volunteers are married. In 1987 almost three-quarters of the volunteers were married, while only 17% were single (never married). One in ten was widowed, separated or divorced. Among social service organizations, widowed, separated or divorced individuals accounted for a much higher proportion - 17%. They also represented a sizeable fraction in health organizations. The proportion of single persons was relatively high in arts and culture organizations (26% of the total) and in international organizations (30%) - areas where young children, and hence their parents, are less likely to be involved.

Impact of children

Overall, just over half of all volunteers were heads of families³ with children at home, while only 38% were heads of families with no children at home. The presence of children in a family has a strong impact on the likelihood of an individual volunteering for certain types of organizations. For example, two-thirds of volunteers in education and youth development organizations were heads of families with children at home. Among female volunteers in these organizations, 71% had children at home.

In leisure, recreation and sports organizations, 57% of the volunteers were family heads with children at home, while only 30% were family heads with no children at home (the rest were either single adults or children). About 70% of female volunteers working for law and justice organizations had children at home - not so surprising since one-third of all volunteers in these organizations were involved with the "Block Parents" program. Only organizations in the international and foreign category had appreciably more volunteers who were heads of families without children at home (58%).

Table 3
Profile of volunteer organizations

Proportion of jobs held by volunteers who are:

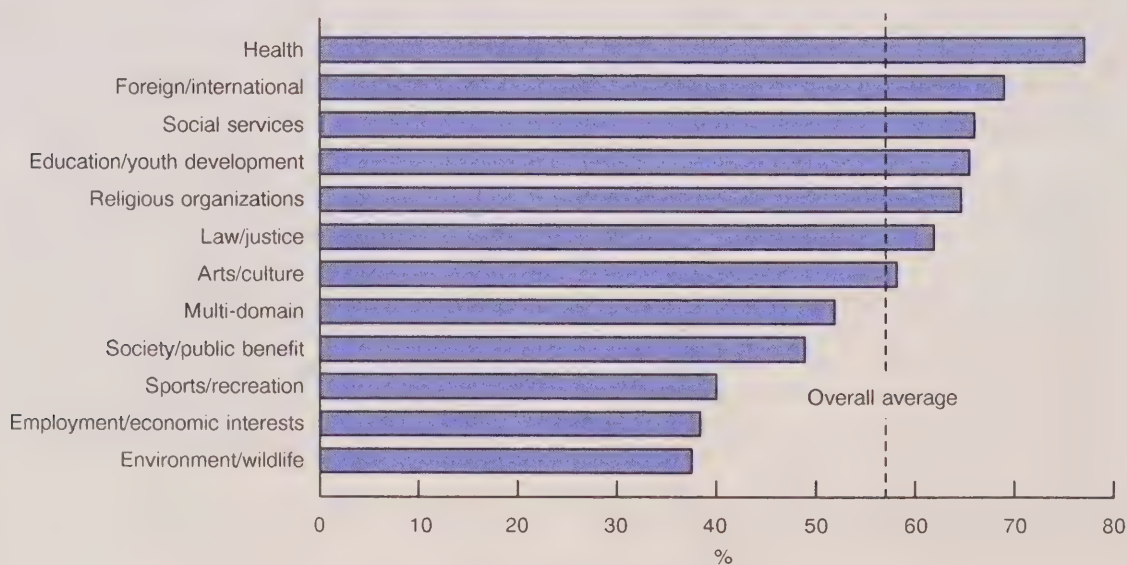
	Women	Age 25-44	Family heads with children	Univer- sity grad- uates	In a mana- gerial or profes- sional occupation	Active for one month only	In a house- hold with an income of \$40,000 or more	Employed*
	%							
All organizations	57	49	51	21	34	16	35	64
Health	77	41	42	17	29	35	36	52
Education and youth development	65	64	66	24	36	10	40	65
Social services	66	40	42	22	32	18	29	53
Sports	40	60	57	18	32	12	38	75
Law and justice	62	59	64	23	36	10	34	64
Employment and economic interests	38	59	51	34	50	9	43	83
Religious	65	39	49	19	30	8	30	57
Arts and culture	58	41	37	35	43	8	34	61
Society and public benefit	49	53	56	22	34	24	38	75
Environment and wildlife	38	40	37	24	31	19	35	64
Foreign and international	69	38	28	40	49	23	42	54
Multi-domain	52	40	48	16	30	19	32	61

Source: Survey of Volunteer Activity

* This refers to paid employment.

Proportion of women in volunteer organizations, 1987

Jobs in health are dominated by women while jobs in environment/wildlife are more likely performed by men.



Source: Survey of Volunteer Activity

What's their background?

Education

More than half of all volunteers had secondary school education or less. Overall, just over one-fifth of volunteer jobs were held by persons with a university degree. The highest proportion of volunteers with a degree was found among international organizations (40%), followed by arts and culture organizations (35%) and economic organizations (34%).

Household income

The largest group of volunteers belonged to middle-income households. Over 40% of all volunteers came from households with incomes between \$30,000 and \$59,999; 14% had incomes of \$60,000 or over; and only 5% had household incomes below \$10,000. Persons with household incomes over \$60,000 were proportionately most concentrated in economic and international organizations (19% and 21% respectively). Lower-income volunteers (those from households with incomes below \$20,000) were most highly represented in social services organizations – almost one-quarter of the total in this area. This may reflect the high proportion of older people in this area – fully 19% of the volunteers in social services organizations were at least 65 years old.

Occupation

Although volunteers come from all walks of life, the largest group comprises individuals with managerial or professional job experience. Overall, about one-third of the volunteers were, or had been, in these occupations.⁴ Among men, the figure was 40%, while for women it was 29%. In law and justice organizations and in arts and culture organizations, over one-half of the male volunteers were in the managerial and professional category.

Among female volunteers, almost one-quarter had last worked at a paid job more than five years ago. The proportions were even higher for female volunteers in religious organizations (28%) and health organizations (27%).

Employment and volunteering

An old saw says that if you want something done quickly, give it to the busiest person you know. Does this have any validity for volunteers? Indeed it does. Almost two-thirds of volunteers also had a paid job (compared with 60% of all persons aged 15 or older). Among male volunteers, over three-quarters were employed, and among women, 53% were employed. Almost nine out of ten male volunteers in community organizations were employed, while in arts and culture organizations, over two-thirds of male volunteers were also employed.

About half of female volunteers were employed regardless of the type of organization they volunteered for – the highest proportion being for economic organizations (78%) and the lowest, for international organizations (46%). (The high proportion of employed volunteers may also reflect the "networking" opportunities provided by volunteer activity.)

Time spent volunteering

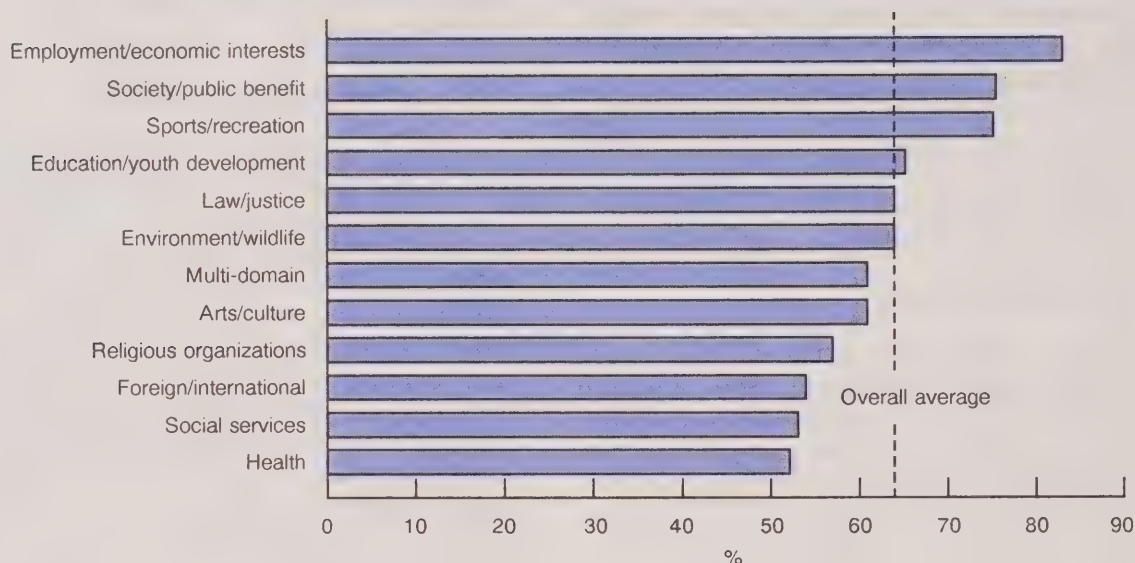
How much time do volunteers devote to their volunteer jobs? The subject can be viewed from several perspectives: hours per week, months per year, or years with an organization.

Hours per week

Over the 12-month reference period, the average volunteer job involved about two hours a week. Only law and justice organizations were noticeably different, with an average of almost seven hours a week.

Proportion of volunteers with a paid job, 1987

Over half of all volunteers have a paying job.



Source: Survey of Volunteer Activity

This higher rate is likely caused by two of the main components of the law and justice group – Block Parents and Neighbourhood Watch, both of which are programs that allow people to volunteer at home while doing other activities.

The "average number of hours" variable is somewhat misleading because of the distribution of the hours volunteered. Over 90% of the volunteer jobs averaged five hours or less per week, but they accounted for only half of the total number of hours volunteered. In other words, a small core of volunteers supplied a large proportion of total volunteer time. For example, in law and justice organizations, about three-quarters of the total hours were put in by only 5% of the volunteers.

Months per year

The door-to-door canvasser, calling once a year to raise money for a specific disease or illness, is one common stereotype of a volunteer. Volunteer jobs in health organizations contribute to this image. About one-third of these jobs spanned one month or less compared with only about 16% of all volunteer jobs. Jobs in religious organizations, on the other hand, were more likely to involve close to a year-round commitment – almost 40% of these jobs involved ten or more months compared with less than one-quarter of all volunteer jobs.

Volunteer tenure

Most volunteer positions involved only a limited commitment: 42% of all volunteer

jobs had been held for two years or less at the time of the survey. Nonetheless, another 30% of all volunteer jobs had been occupied for more than five years. Law and justice organizations had the highest proportion of short-tenure volunteers (59%), while religious organizations had the largest proportion of long-tenure volunteers (46%).

Time of day

Not surprisingly, the majority of volunteer work is done in the evenings – over half the men and more than a third of the women doing volunteer jobs reported evenings as their usual time for this activity. Only religious organizations involved a significant proportion of morning volunteer duties (23%). Volunteer jobs in environmental and wildlife organizations were the most likely

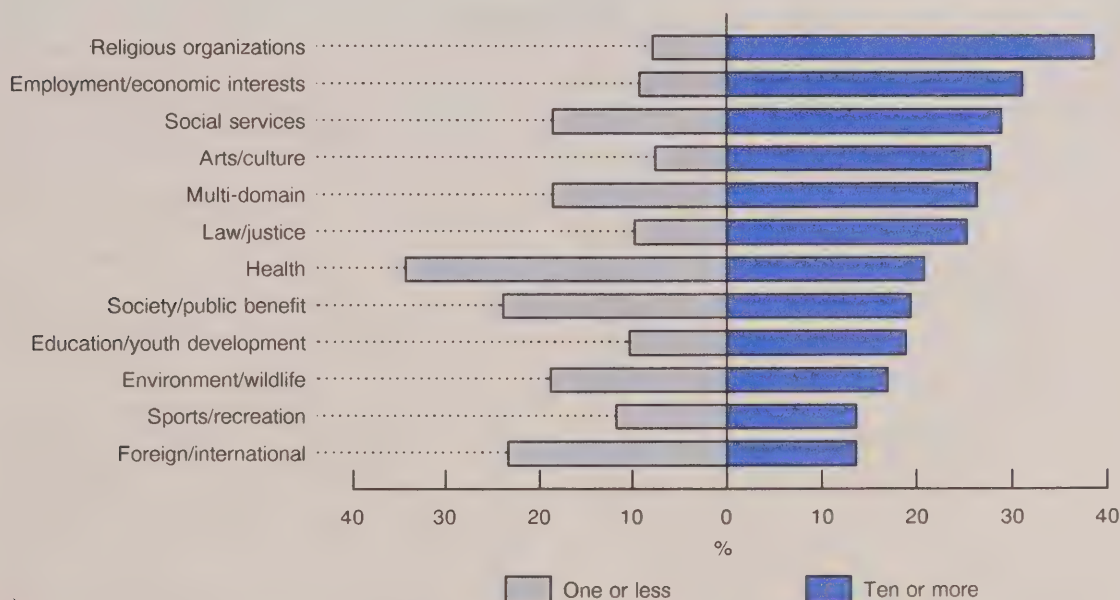
to last full days (31%), with jobs in community organizations running a distant second (23%).

Day of the week

As one might expect, most volunteer jobs were performed Monday to Friday (75%). Weekday volunteer jobs were slightly less common in religious and environmental organizations (67%). Overall, only 13% of volunteer work was done on Saturdays – among that done by men the proportion was 17%. About one-fifth of the jobs in leisure and environmental organizations were performed on Saturdays. Sundays were the quietest days for volunteer activity, with only 7% of volunteer jobs overall. The exception was religious organizations, in which 15% of volunteers were active on that day.

Months spent volunteering for an organization, 1987

Jobs in health organizations are often short-term while those in religion tend to be long-term.



Source: Survey of Volunteer Activity

Conclusion

What does the future hold for volunteer organizations? A rising demand for social services in an era of fiscal restraint implies that more activities will have to be assumed by volunteers. In addition, the changing age profile of the Canadian population will have an impact on the types and amounts of services required.

For volunteer organizations, the challenge will be not only to attract and hold members, but also to adjust to changes in the demand for their services. For example, social service (care and support) organizations will probably find their activities more in demand in the future. But at the same time, these organizations will probably find it easier to recruit new volunteers from the larger pool of persons age 65 and over. □

Notes

¹ This estimate is based on 40 hours per week, 50 weeks per year.

² Volunteers usually report doing several activities for each organization served, for example fundraising, sitting on the board, recruiting new members and providing information. A volunteer can be counted not only in several different activity categories, but also two or three times in the same category (for example fundraising) if he or she performed that activity for two or three different organizations.

³ In this study, heads of families comprise both spouses, when present, as well as lone parents in single-parent families.

⁴ For those volunteers currently working in a paid job, the occupation refers to that job; for all other persons, the occupation referred to is that of the most recent paid job held in the previous five years.

Reference

Duchesne, D. *Giving Freely: Volunteers in Canada*, Labour Analytic Report No. 4, Cat. 71-535. Ottawa: August 1989.

List of volunteer organizations

Volunteer organizations were classified into 14 broad groupings for analytical purposes. The following list describes the types of organizations contained in these broad groupings.

Health

Hospitals and hospital auxiliaries
Other health facilities (e.g. nursing homes)
Specific diseases (e.g. Canadian Cancer Society)
Addiction (e.g. Alcoholics Anonymous)
Eating habits (e.g. Overeaters Anonymous)
Family planning, prenatal, infant care
First aid

Education and youth development

Youth development (e.g. Boy Scouts, Big Sisters)
Early education
School (excludes sports and artistic programs)
Parent-teacher groups
School boards
Postsecondary education
Art school
School artistic programs (e.g. choirs, theatre)
School sports
Official language education
Literacy programs
Special education
Public and adult education (e.g. Toastmasters)
Student organizations

Social services (care and support)

Economic assistance (e.g. food banks, soup kitchens)
Homes and shelters
Care and assistance (e.g. citizen advocacy, home care)
Child care
Support in emotionally or socially difficult situations
Multi-purpose services (e.g. Children's Aid Society)

Sports and recreation

Recreational and sports facilities
Recreational organizations
Recreational events and activities
Hobby groups and common interests groups
Social clubs and events
Vacation camps
Physical activity and fitness
Sports events and competitions

Law and justice

Legal aid and education
Crime prevention (e.g. Block Parents, Neighbourhood Watch)
Offenders and ex-offenders (e.g. John Howard Society)

Employment and economic interests

Employment opportunity (e.g. job counselling, sheltered workshops)
Business interests (e.g. Junior Achievement, Chamber of Commerce)
Consumer protection
Finances (e.g. Caisse Populaire, tax advice)
Housing interests
Labour unions
Occupational and professional associations, professional development
Occupational health and work safety

Religious organizations

Organizations providing religious services
Church and other religious choirs and musical ensembles
Formal religious education
Groups with religious affiliation
Camps under church auspices
Church and temple groups providing secular services

Arts and culture

Historic preservation
Museums and galleries
Libraries
Theatre
Choirs and musical ensembles
Dance ensembles
Other art disciplines
Communication (e.g. radio, TV, newspapers)

Society and public benefit

Agricultural society
Pro-life and right-to-life
Allied youth
Running of the community (e.g. town councils)
Community facilities and integration (e.g. Welcome Wagon)
Volunteerism
Groups serving the community
Political parties and associations
Canadian and citizenship issues
Human rights and social justice (e.g. abortion, women's rights)
Firefighting
Search and rescue, emergency and general safety
Cemetery maintenance

Environment and wildlife

Pollution
Resource conservation
Wilderness and wildlife protection
Animal care and protection

Foreign and international organizations

Organizations concerned about living conditions (e.g. Oxfam)
Culture, ideology, peace and human rights (e.g. Amnesty International)

Multi-domain

Service clubs, fraternal organizations, lodges and Masons
Multi-purpose native, ethnic and women's organizations
Other (e.g. Red Cross, Salvation Army, YM/YWCA)

Other

Organizations not elsewhere classified

Unidentified or not stated

Dependency ratios: An international comparison

Raj K. Chawla

Canada's population is aging. The number of persons 65 years and over, 7.6% of the total population in 1966, accounted for 10.9% in 1987. Two factors have contributed to this situation: the declining rate of fertility (from over two children per woman in the 1960s to about 1.6 in the 1980s), and an increase in life expectancy for persons aged 65 and over.

Because of the decline in the fertility rate over the last couple of decades, Canada may not be able to sustain a balance between the proportion of the population retiring from the labour force and the proportion entering the labour force (unless it allows considerably more working-age immigrants to enter the country). Consequently, there may not be enough workers in the coming decades who are able to pay the bulk of direct taxes and other contributions that would finance most of the future pensions of those currently working.

Under the "pay-as-you-go" retirement pension scheme, prevalent in Canada and other major industrialized countries, there is an inter-generational transfer of funds; that is, persons employed today are paying the pension costs of today's elderly, and the cost of pensions for those working today will be borne by those employed in the future. It is

this concept of the inter-generational transfer of funds that raises concern about the aging of the population. Society is becoming more conscious about the balance between the number of persons employed, who usually provide most of the financial support, and the number economically dependent, such as retirees, disabled persons, the unemployed, and so on.

Is Canada alone among the industrialized countries in facing the problem of an aging population? How has the "not employed/employed" ratio varied in Canada over the last two decades? How has the growth in the number of working women affected this ratio? What will the ratio be in the year 2030?

This article attempts to answer these questions, using data published by the Organisation for Economic Co-operation and Development (OECD). The focus is on Canada's situation during the last two decades and how we compare with the United States, the United Kingdom, France, West Germany, Italy and Japan – the seven major economies in the Western world, commonly known as the "G-7" group.

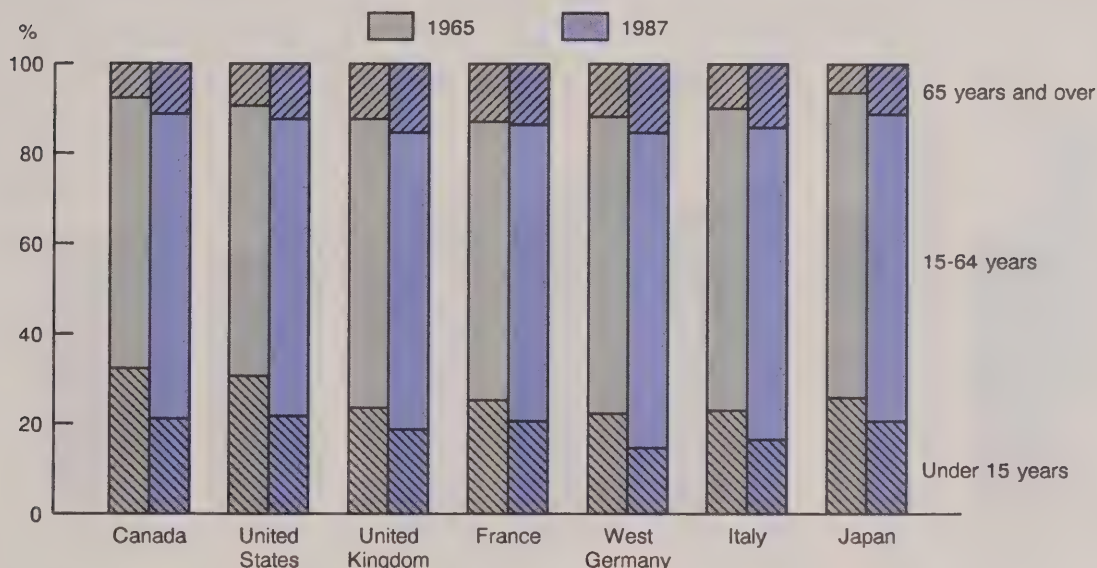
Definitions of dependency ratios

One can compile a multitude of dependency ratios, depending on the choice of the numerator (which identifies the dependent group) and the denominator (which identifies the support group). This study

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Percentage distribution of population for seven major OECD countries

For each country the proportion of the elderly population has grown over the 1965-87 period.



Source: Labour Force Statistics, OECD, Paris

uses only two ratios: the first is the commonly used "age-specific" ratio, and the second is the "labour market adjusted" ratio.

The age-specific dependency ratio (R1) is used to study the shift, either over time or across selected countries, in the demographic mix of a population. It expresses the number of assumed dependants (that is, persons under age 15 and over age 64) per 100 persons aged 15-64 (that is, the population considered to be economically active and independent).¹ Some portion of persons aged 15-64 would not be working because they are still studying, voluntarily not working, physically unable to work, or unemployed. Thus, a more appropriate measure may be a ratio that includes as dependants persons aged 15-64 who are not employed. This labour market adjusted dependency ratio (R2) is more realistic because it shows the number of persons not employed per 100 employed persons. By definition, therefore, R2 has to be greater than R1.²

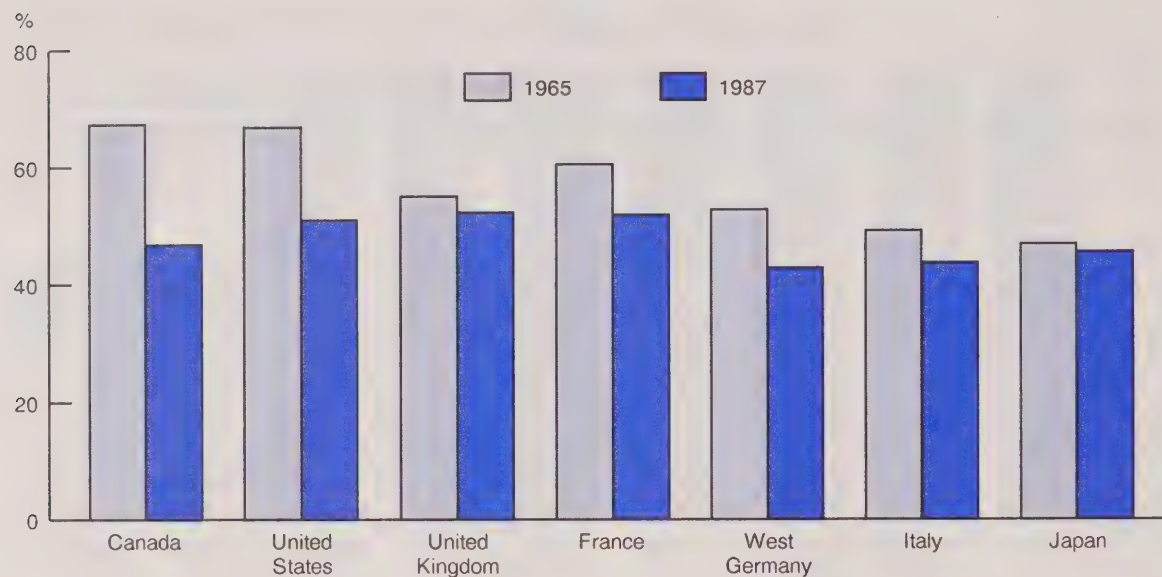
Age-specific dependency ratio

Between 1965 and 1987, all the G-7 countries experienced a similar change in the age-mix of their population: the proportion of persons under age 15 declined (reflecting a drop in fertility rates), whereas the proportion of those aged 65 and over increased (reflecting the aging of the populations). The drop in the proportion of persons under age 15 was highest in Canada (12 percentage points) and lowest in France and the United Kingdom (four percentage points each). This compares with a drop of nine percentage points for the United States. On the other hand, Japan showed the largest increase in the proportion of persons aged 65 and over: five percentage points compared with only three for both Canada and the United States.

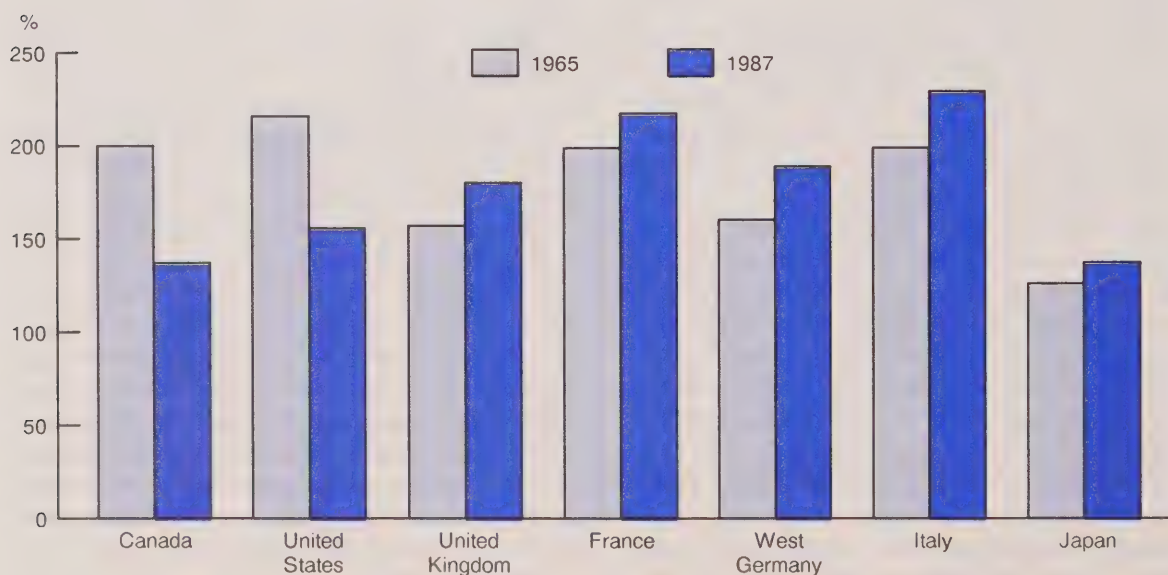
In a nutshell, although Canada had a relatively greater proportion of younger persons during the mid-1960s, its age-mix

Dependency ratios for seven major OECD countries

For each country the age-specific dependency ratio has dropped over the 1965-87 period . . .



. . . but the labour market adjusted dependency ratio has increased over the same period in each country except Canada and the U.S.



Source: *Labour Force Statistics, OECD, Paris*

Table 1
Percentage distribution of population by age groups for seven major OECD countries, 1965 and 1987

Country	Percentage distribution of population				Women as proportion of population				Total population	
	Under 15 years	15-64 years	65 years and over	Total	Under 15 years	15-64 years	65 years and over	Total		
									%	'000
1965										
Canada*	32.6	59.8	7.6	100.0	49.1	49.5	53.3	49.7	20,470	
United States	30.5	60.0	9.5	100.0	49.1	50.7	56.6	50.8	194,303	
United Kingdom	23.4	64.5	12.2	100.0	49.7	50.5	62.0	51.5	54,350	
France†	25.0	62.3	12.8	100.0	49.0	49.9	62.7	51.2	50,318	
West Germany	22.6	65.4	12.0	100.0	48.7	52.4	61.1	52.6	58,619	
Italy	23.1	67.1	9.8	100.0	49.1	51.4	56.2	51.4	50,840	
Japan	25.7	68.0	6.3	100.0	48.9	51.2	56.2	50.9	97,950	
1987										
Canada*	21.0	68.1	10.9	100.0	48.7	50.1	58.1	50.7	26,115	
United States	21.5	66.3	12.2	100.0	48.8	50.5	59.4	51.2	243,915	
United Kingdom	18.9	65.6	15.5	100.0	48.7	49.9	60.4	51.3	56,930	
France†	20.6	65.9	13.5	100.0	48.7	50.0	61.2	51.3	55,630	
West Germany	14.6	70.1	15.4	100.0	48.9	49.7	66.1	52.1	61,199	
Italy	16.3	69.5	14.1	100.0	48.6	50.7	57.7	51.3	56,664	
Japan	20.4	68.7	10.8	100.0	48.8	50.1	59.6	50.8	122,090	

Source: "Labour Force Statistics" published by the OECD, Paris, (1989 edition); for Canada, however, data are from Statistics Canada.

* For Canada, figures are shown for 1966 and 1987.

† For France, figures are shown for 1969 and 1987.

had become more similar to that of the United States and Japan by the mid-1980s. Obviously, declining fertility and mortality rates, and the age structure of new immigrants have all contributed to a significant shift in the age-mix of the Canadian population.

The age-specific dependency ratio R1 (Table 2) shows that in Canada there were 67 dependants (55 under age 15 and 12 over age 65) per 100 potentially active persons during the mid-1960s. This compares with 47 dependants by the late 1980s (31 under age 15 and 16 over age 65), the largest overall drop among the seven countries. In contrast, the overall dependency ratio for Japan fell only marginally, from 47 to 46,

although there was quite a shift by age group. For example, the breakdown in terms of Japanese under age 15 versus 65 years and over was 38:9 in 1965 compared with 30:16 in 1987. The make-up of the dependency ratio for the United States, on the other hand, was similar to that of Canada (that is, 51:16 in 1965 compared with 32:18 in 1987).

In the mid-1960s, a greater proportion of the dependants in each G-7 country were persons under age 15. Twenty years later, however, the make-up of the dependency ratio had changed due to the increasing numbers of the elderly. The continuation of this trend may necessitate changes, not only in the allocation of public expenditures on

Table 2
Selected dependency ratios* for seven major OECD countries, 1965 and 1987

Country	R1		R2		
	1965	1987	1965	1987	
				Excluding 1965-87 increase in employed women	Including 1965-87 increase in employed women
	%				
Canada†	67.3	46.9	199.4	211.3	137.7
United States	66.6	50.9	215.1	225.4	155.8
United Kingdom	55.1	52.3	157.5	200.2	179.6
France††	60.6	51.7	198.6	243.3	216.5
West Germany	52.9	42.7	160.1	184.4	188.1
Italy	49.0	43.8	198.2	247.0	228.5
Japan	47.0	45.5	125.8	151.5	137.8

Source: These ratios have been compiled by the author using data from the "Labour Force Statistics" published by the OECD, Paris, (1989 edition); for Canada, however, data are from Statistics Canada.

* The dependency ratios are defined as follows:

$$R1 = [(persons <15) + (persons 65+)] / (persons 15-64) \times 100$$

$$R2 = [(persons <15) + (persons 65+) + (persons 15-64 not employed)] / (employed persons 15-64) \times 100$$

† For Canada, ratios are shown for 1966 and 1987.

†† For France, ratios are shown for 1969 and 1987.

pensions, health, and education, but also in the financial, institutional, and consumer markets. For example, with the continuing growth in the elderly population, we may have to spend more on pensions, and health care (such as hospitals and nursing homes) than on education and related services.

Labour market adjusted dependency ratios³

The R2 dependency ratios (Table 2) show that, during the mid-1960s, for every 100 employed Canadians aged 15-64, 199 persons were not employed. This compares with 215 not employed in the United States, 158 in the United Kingdom, 160 in West Germany, 199 in France, 198 in Italy, and 126 in Japan. In other words, the United States had the highest dependency ratio and

Japan had the lowest. By the late 1980s, however, Canada and Japan ranked on top (with ratios of 138), followed by the United States.

Between the mid-1960s and the late 1980s, the R2 ratio dropped significantly for Canada and the United States, but it increased for the four European countries. (The highest jump occurred in Italy.)

Such contrasting movements for the North American and European countries may indicate changes in their respective labour markets. These changes may arise due to differential growths in economies, creation of jobs and other structural changes. As well, other demographic shifts, such as aging, and migration of populations may also contribute to these changes.

One of the most significant developments in each of the seven countries was the

growth in the number of women in the labour force over the period in question. During the mid-1960s, women accounted for 30.4% of the employed labour force in Canada, 34.8% in the United States, 34.6% in the United Kingdom, 37.1% in West Germany, and 28.8% in Italy. By the late 1980s their proportions had moved to 43.2%, 44.8%, 43.1%, 39.5% and 34.3%, respectively.⁴ This indicates that in terms of the change in the representation of women in the employed labour force, Canada ranked higher than all other major industrialized countries.

The dependency ratios would have increased over time in all countries if the remarkable growth in the number of employed women had been excluded (Table 2). However, the magnitude of the increase would have varied from country to country; for example, the ratio would have moved up anywhere between 10 and 20 percentage points for the United States and Canada, compared with 24 to 49 percentage points for the European countries. The growth in the number of employed women in each of the seven countries has been largely due to the growth in the service industries in each of these seven countries.

The dependency ratio (R2) would have shown relatively excessive increases for the European countries if it had been based only on the increase in the number of employed men. This indicates either that the employment opportunities for men did not keep pace with those for women or that the men who were not employable, due to disability or to some structural changes in the labour market, had opted for earlier retirement. As noted in the most recent International Labour Office study on social security in Europe, "...the most significant trend in the past decade has in fact been towards allowing greater 'flexibility' in retirement age, by adopting a set of new eligibility conditions enabling persons to retire earlier than the normal 'statutory'

age (with or without a reduction in benefit).... It is not entirely clear whether increased flexibility...was motivated mainly or exclusively by labour market or social considerations or whether demographic concern played a role...."⁵

Perspective on future dependency ratios⁶

The problem of an aging population is not unique to Canada. Other industrialized countries are also facing the same problem. According to a recent OECD report, *Ageing Populations* (1988), the Canadian population 65 years and over will increase from 9.5% of the total in 1980 to 22.4% in 2030. Over the same 50-year period, the proportion of the elderly will grow from 11.3% to 19.5% in the United States, from 14% to 21.8% in France, from 15.5% to 25.8% in West Germany, and from 14.9% to 19.2% in the United Kingdom.⁷

As was noted in the OECD report, the dependency ratio R1 will also rise during the coming decades in all of the seven industrialized countries; for example, for every 100 persons 15-64 years, Canada will have 66 dependants in 2030 compared with 62 in the United States, 69 in West Germany, 64 in France, and 60 in Japan. The corresponding dependency ratios for these countries in 1980 were 48 in Canada, 51 in the United States, 51 in West Germany, 57 in France, and 48 in Japan.⁸ In other words, over the 50-year period the age-specific dependency ratio (R1) will show the highest increase for Canada, at 38%, compared with 22% for the United States, 35% for West Germany, and only 12% for France.

For each of these countries, the age-specific dependency ratio between the mid-1960s and the year 2030 would follow a U-pattern. The dependency ratio, which has fallen since the mid-1960s, will continue to drop until 2010 for Canada, France and the

United States, and then begin to edge upwards. The turning point for all the other countries, however, would occur after 1990. As well, the composition of the dependency ratio would have changed during this period; the elderly population, which accounted for anywhere between 19% to 35% of the so-called dependent population in the mid-1960s, would constitute between 50% and 63% by the year 2030 (OECD, 1988).

The relative shifts over time in dependency ratios based only on age by no means reflect the magnitude of change in the support burden to be experienced by each of these countries. Age-specific dependency ratios do not take into account labour force participation rates, unemployment rates, formation and dissolution of families, social security systems and other economic conditions of countries. Thus, these ratios should always be compared with some degree of caution. □

Notes

¹ Alternatively, one could have considered persons aged 25-60 years as the potentially active population since most persons 15-24 years are students and more workers are retiring before age 65.

² The dependency ratios R1 and R2 can be linked algebraically to calculate the employment/population ratio for persons 15-64 years:

$$\text{employment/population ratio} = (R1 + 1)/(R2 + 1)$$

The ratio R2, which by definition has to be greater than R1, has been calculated on the assumption that persons 65+ were not employed.

³ Some of the differences in dependency ratios based on the number of employed persons could be attributed to the differences in the means and sources of data collection, their compilation, the conceptual frameworks used to define persons as employed and not employed, and other sampling and non-sampling errors. For an insight into the problems involved in comparing international data on labour force statistics, see

Sorrentino (1981, 1983), Moy (1988), McMahon (1986) and OECD (1988).

⁴ Changes in participation rates of men and women over the same period for these industrialized countries will be discussed in a separate paper to be published in a forthcoming issue of *Perspectives on Labour and Income*.

⁵ See p. 83, ILO (1989)

⁶ This section is based on data on R1 ratios as projected by the OECD (1988) report. No attempt is made here to provide a future perspective on R2 ratios, which would require assumed values of employment/population ratios. This in turn would depend on the prevailing economic situation of each country as well as on several other extraneous factors.

⁷ See Table 6, p. 22, OECD (1988).

⁸ See Table 13, p. 29, OECD (1988).

References

Denton, F.T., C.H. Feaver and B.G. Spencer. "Prospective Aging of the Population and Its Implications for the Labour Force and Government Expenditures," *Canadian Journal on Aging*, Vol. 5, No. 2. Toronto, 1986, pp. 75-98.

Falkingham, J. *Britain's Ageing Population: The Engine Behind Increased Dependency?*, Discussion Paper, No. 17. London, U.K.: London School of Economics and Political Science, Welfare State Programme, 1987.

Fellegi, I.P. "Can We Afford an Aging Society?" *Canadian Economic Observer*, Cat. 11-010. Ottawa, October 1988, pp. 4.1-4.34.

Health and Welfare Canada. *Charting Canada's Future: A Report of the Demographic Review*. Ottawa, 1989.

International Labour Office. *From Pyramid to Pillar: Population Change and Social Security in Europe*. Geneva, 1989.

McMahon, P.J. "An International Comparison of Labor Force Participation, 1977-84," *Monthly Labor Review*. Washington, D.C., May 1986, pp. 3-12.

Moy, J. "An Analysis of Unemployment and Other Labor Market Indicators in 10 Countries," *Monthly Labor Review*. Washington, D.C., April 1988, pp. 39-50.

References – Concluded

Organisation for Economic Co-operation and Development. *OECD Employment Outlook*, Chap. 5. Paris, 1988.

Organisation for Economic Co-operation and Development. *Ageing Populations: The Social Policy Implications*. Paris, 1988.

Sorrentino, C. "Youth Unemployment: An International Perspective," *Monthly Labor Review*. Washington, D.C., July 1981, pp. 3-15.

Sorrentino, C. "International Comparisons of Labor Force Participation, 1960-81," *Monthly Labor Review*. Washington, D.C., February 1983, pp. 23-36.

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Perspectives on Labour and Income

The quarterly for labour market information



Trading places: Men and women in non-traditional occupations, 1971-86

Karen D. Hughes

Since the rise of the women's movement in the 1960s, the traditional economic activity of men and women has been significantly reshaped. Canadian women now participate in the labour market in greater numbers, for longer periods of time, with better educational credentials, and in a wider range of jobs than ever before. In a less dramatic fashion, men's economic activity has also been affected by this wave of social change.

For observers concerned with economic equality between the sexes, the entrance of women and men into "non-traditional" occupations is one trend of particular interest. Such a crossover is significant because it seems to promise to erode traditional employment patterns, in which men have dominated well-paid employment and women have clustered into poor-paying jobs. It is these patterns of "occupational sex segregation" that underlie much of the economic disparity experienced by women in terms of pay, promotion prospects and job security (Krahn and Lowe, 1987: 129-130; Boulet and Lavallée, 1984: 14).

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Precisely how the sex composition of traditional occupations has been refashioned is a question that sparks much debate.¹ This study explores the extent to which occupational crossover occurred between 1971 and 1986 and how this has influenced disparities between the sexes. Using Census of Population data from 1971 and 1986,² it traces the changing contours of women's and men's work activity, paying specific attention to non-traditional occupations that experienced the greatest increase in minority sex representation, whether women entering "men's fields" or vice versa. In particular, the following questions are addressed:

- How has the representation of women and men in non-traditional occupations changed? Have patterns of change differed for women and men?
- Which non-traditional occupations experienced the greatest influx of the minority sex?
- What are the characteristics (age, education, marital status) of workers in non-traditional occupations compared to those of the average female or male worker?
- Does the work status and income of the minority sex differ from that of the dominant sex in non-traditional occupations?

Why use this measure?

For purposes of this study, the coefficient approach has two distinct advantages. First, we define non-traditional occupations in 1971, when women comprised only 34.3% of the experienced labour force.³ Given this level of representation, it is impossible for women to be equally represented (that is, 50%) across all occupations. A cut-off of 34.3%, rather than 50.0%, more accurately reflects their situation. Second, and more important, we are interested in tracing growth in non-traditional occupations over a period when the proportion of women in the experienced labour force rose from 34.3% to 42.8%. Given such dynamics, a simple comparison of change in the sex composition of individual occupations confuses two distinct processes: (1) change associated with a change in each sex's rate of participation in the experienced labour force; and (2) change associated with a pure shift of each sex either into or out of an occupation. A comparison of coefficients isolates the actual shift of the under-represented sex into non-traditional occupations by taking into account the effect of the change in the sex

composition of the experienced labour force (Noyelle, 1987: 375).

Despite the usefulness of this coefficient, it should be noted that its range for non-traditional occupations is wide – 0.00-0.99. This means that, as the coefficient moves towards 0.99, it includes occupations whose sex composition closely reflects that of the total occupational structure and which are not non-traditional in the usual sense of the word. Given that we are interested in a range of occupations that were uncommon career choices for women or men in 1971, we focus specifically on occupations with a coefficient value of less than 0.50. An occupation is therefore defined as non-traditional for the sex whose representation in that occupation is less than half its total representation in the experienced labour force.

Change in the representation of the sexes in non-traditional occupations between 1971 and 1986 is expressed as the difference between the coefficients derived for the two years (that is, 1986 minus 1971). This provides a straightforward measure of the movement toward greater (or lesser) representation of the minority sex in non-traditional occupations.⁴

Defining non-traditional occupations

To answer these questions, we must define non-traditional occupations. Past research has taken two different approaches (Boulet and Lavallée, 1984: 71-73). The first approach has defined an occupation as "non-traditional" if one sex comprises less than 50% of workers in an occupation. This cut-off is fixed regardless of the percentage distribution of the sexes within the labour force as a whole.

This study uses the second method, which considers the distribution of the sexes within each occupation in relation to their distribution in the total labour force. Using this definition, an occupation is non-traditional for the sex whose representation in that particular occupation falls below its representation in the labour force. Thus, for example, if 30% of workers in all occupations are female, an occupation composed of 10% women would be deemed non-traditional for women while another occupation comprising 40% would be traditional. This definition can be numerically expressed as a "coefficient of

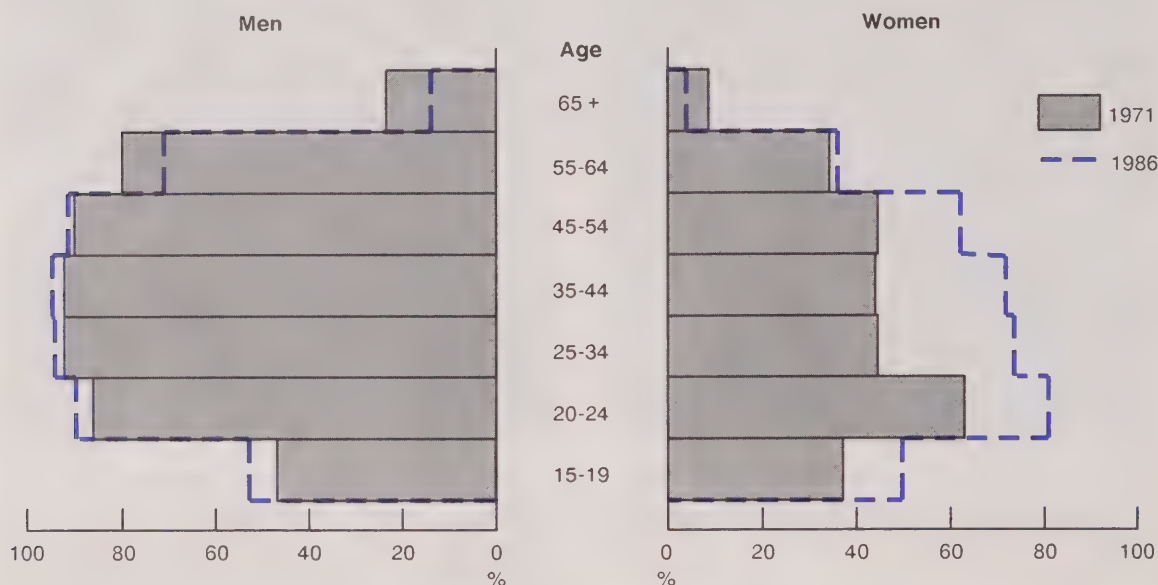
representation".⁵ A coefficient below 1.00 indicates that a sex is under-represented and that the occupation is non-traditional for it; a coefficient above 1.00 indicates the reverse. In the example given above, the occupation with 40% women would have a ratio of 1.33, denoting its traditional status; conversely, the occupation with 10.0% women and a coefficient of 0.33 would be deemed non-traditional for women but traditional for men.

Labour market trends, 1971-86

As a prelude to examining the entrance of males and females into non-traditional jobs, it is useful to consider the performance of the Canadian labour market over the period. Overall, 1971 through to 1986 witnessed significant change both in aggregate employment levels and in the characteristics of the labour force. The experienced labour force grew 48.2%, from 8.6 million in 1971 to 12.8 million in 1986. The bulk of this expansion occurred in the first ten years, with growth slowing considerably in the 1981-86 period.

Labour force participation rates, 1971 and 1986

The participation rate for all women rose from 40% to 55% while the rate for men remained nearly constant.



Sources: 1971 and 1986 Censuses of Canada

Contributing in large part to the rate of this growth between 1971-86 was the marked increase in women's entrance into the labour market. Female participation rates rose from 39.9% in 1971 to 55.4% in 1986, while those for men remained constant (76.4% and 77.0% respectively). The jump in women's participation was especially notable for specific age groups; in particular, rates for women aged 25-44 increased by about two-thirds. Rates for men, on the other hand, remained almost static with the exception of a 12% rise among youths aged 15-19 and a dramatic fall among older workers aged 55 and over.

Taken together, these related trends of overall employment growth and increased female labour force participation markedly transformed the experienced labour force. The number of male workers increased

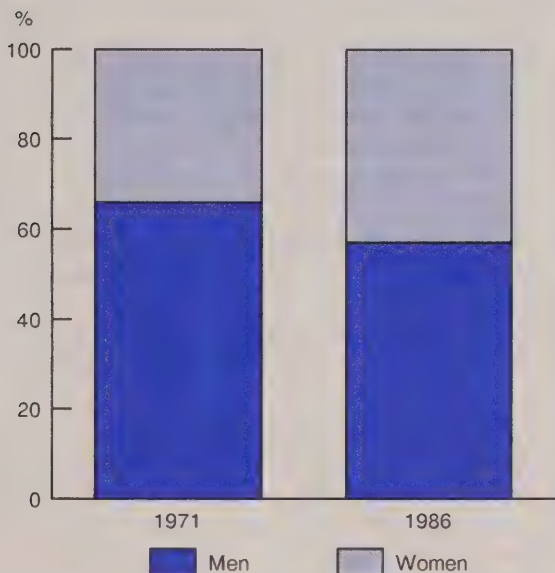
29.1%, while the number of female workers surged 84.6%. At the same time, the proportion of women in the experienced labour force grew from 34.3% to 42.8%.

Educational trends, 1971-86

During the period 1971-86, traditional educational choices were also undergoing a transformation. Both men and women became better educated overall, but women in particular made great strides. Between 1970-71 and 1984-85, the number of degrees awarded to women leapt by 80% compared to a modest 6% increase for men (Guppy et al., 1987: 175-77). The effect was of course felt in the labour market, where 11.7% of women had some kind of university education in 1986, more than double the proportion in 1971.

Proportion of men and women in the experienced labour force

The experienced labour force grew from 8.6 to 12.8 million, with the number of women surging 85%.



Sources: 1971 and 1986 Censuses of Canada

Table 1
Education levels of experienced labour force, 1971 and 1986

Level of schooling	Females		Males	
	1971	1986	1971	1986
Less than Grade 9	20.1	7.7	29.6	12.2
Grade 9 - 13	49.9	41.5	43.4	39.8
Some postsecondary	25.0	39.1	19.2	34.5
Some university	4.9	11.7	7.9	13.4

Sources: 1971 and 1986 Censuses of Canada

Not only did women achieve higher levels of educational attainment over the 1971-86 period (Table 1), they also widened their horizons by pursuing a more diversified range of subjects. Education data for degrees granted to women in the

academic years 1970-71 and 1984-85 show particularly strong growth in such non-traditional fields as engineering, veterinary medicine, commerce, dentistry, law and agriculture.

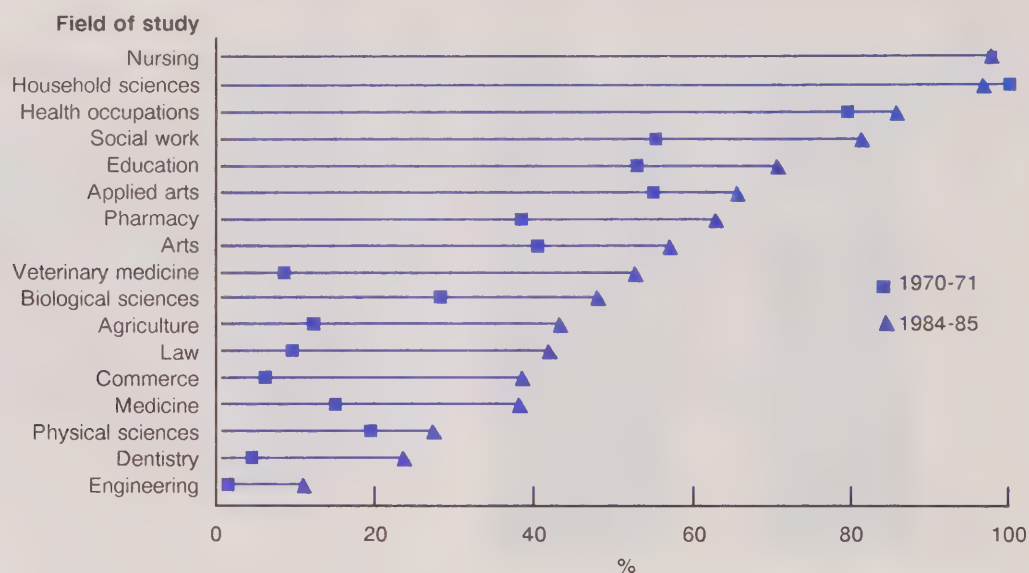
Occupational changes, 1971-1986

In the light of the extensive changes that took place in both the Canadian labour market and educational institutions in the 1971-86 period, what were the consequences for the distribution of women and men within the occupational structure? By classifying each of the 484 detailed occupations of the 1971 Census as non-traditional and traditional, as identified by the coefficients of representation, a crude sketch of changes that occurred during this period can be constructed.⁸ In 1971, 85.7% of women were employed in 131 of the 484 occupations; in other words, over four-fifths of women worked in roughly one-quarter of the types of jobs available to Canadian workers. Furthermore, two-thirds of these 131 traditional occupations fell into the five basic job categories of clerical, machining, services, processing and health. The 353 occupations dominated by men were much more diversified, running the full range of the occupational structure and employing 80.1% of the male work force.

Despite the transformation in women's education and labour market activity, the data for 1971 and 1986 show that there was remarkable stability in the number of traditional and non-traditional occupations for women and men. Where change did occur was, for the most part, within non-traditional occupations for females. The number of occupations that had a very low proportion of women (coefficients of .00-.24) dropped from 224 in 1971 to 162 in 1986, with female representation rising high enough to push these 62 occupations into the other three categories.

Bachelor and first professional degrees attained by women as a proportion of total

In almost every discipline, women's share of all degrees granted increased sharply, e.g., from 38% to 62% in pharmacy.



Source: *Women and Education: A Canadian Perspective*

Table 2

Number of occupations* and proportion of experienced labour force by sex and coefficients of representation, 1971 and 1986

	Coefficients of representation				
	Non-traditional		Intermediate		Traditional
	.0-.24	.25-.49	.50-.74	.75-.99	1.00 +
1971					
Females:					
Number of occupations	224	68	31	30	131
% of female labour force	2.8	5.6	2.0	3.9	85.7
Males:					
Number of occupations	16	35	25	55	353
% of male labour force	0.9	4.0	6.0	8.9	80.1
1986					
Females:					
Number of occupations	162	88	49	53	132
% of female labour force	2.4	4.7	4.6	9.7	78.7
Males:					
Number of occupations	16	34	41	41	352
% of male labour force	1.2	4.8	3.1	12.5	78.4

Sources: 1971 and 1986 Censuses of Canada

* Occupations that are not non-traditional according to the definition established for this study are included in the column labelled "Intermediate" to provide a complete picture of occupational changes in the period.

In direct contrast to women, men recorded little advancement into those occupations in which they were most under-represented. In fact, where increases occurred, they were offset by decreased representation within other occupations; in 1986, 16 additional occupations had coefficients in the .50-.74 range, but 14 fewer had coefficients between .75-.99. Overall, these findings are consistent with observations made elsewhere that declines in occupational sex segregation are primarily the result of women's, not men's, entrance into non-traditional occupations (Fox and Fox, 1987).

Entrance into non-traditional occupations

Beyond simply tracing aggregate trends in the occupational structure, it is illuminating to explore the occupational crossover that did occur and to consider its implications for the economic prospects of women and men. The analysis now focuses on the non-traditional occupations for women and men that experienced the greatest shift in minority sex representation between 1971 and 1986. Such analysis allows us to pinpoint the detailed occupations that experienced notable growth and to profile the types of workers in occupations that were non-traditional for their sex.

All non-traditional occupations are ranked by subtracting the 1971 coefficient of representation from the 1986 coefficient. The difference between the coefficients is a measure of the amount of change in distribution by sex in that occupation during that period: the larger the difference, the greater the change.

This technique yields 21 non-traditional occupations for women and ten for men in which changes were noteworthy. We see that of the 21 occupations for women, six fell into the managerial area and five

into sales and service (Table 3). The remainder were fairly dispersed among the 484 categories and ranged from professional occupations such as lawyers, veterinarians, optometrists and dispensing opticians, to technical and skilled jobs such as typesetters and composers, telegraph operators, and bus drivers. Overall, the changes in these 21 occupations were striking as all had ceased to be non-traditional by 1986, having coefficients of more than 0.50; in fact, bartending and dispensing optician became traditional during this period (over 1.00).

For men, growth was recorded in several occupations most stereotypically associated with women: clerical, teaching, and certain types of manufacturing. Only six of the ten types of jobs analyzed ceased to be non-traditional (Table 4).

Characteristics of workers in selected non-traditional occupations

What were the characteristics of female and male workers in these selected non-traditional occupations? Comparing these people with the average worker in the experienced labour force provides valuable insight into the characteristics of non-traditional workers. However, as the workers in the selected non-traditional occupations may not be entirely representative of non-traditional workers as a whole, we compare them to this group as well.

We can see that the proportion of women within the 25-34 age group was much higher in the 21 non-traditional occupations for women than in the experienced labour force as a whole (Table 5). These women were also much more likely to possess a university degree than the average female worker. There were only slight differences in the marital status of women in non-traditional and traditional occupations. Overall, the differences

Table 3
Non-traditional occupations with greatest shift in female representation between 1971 and 1986; work status and median income in 1985

Occupation	Experienced labour force		Coefficients of representation			Work status		Median employment income*	
	1971	1986	1971 CoF (1)	1986 CoF (2)	Difference 1971-1986 (2)-(1)	% female, full-time, full-year	% male, full-time, full-year	Female income (\$)	Female as % of male income
All occupations	2,961,210	5,466,515				41.8	58.3	18,845	66.8
Total non-traditional	221,630	374,165				53.6	61.2	21,146	71.2
Bartenders	1,900	24,050	.42	1.33	.90	29.3	37.5	9,856	70.1
Veterinarians	75	1,435	.13	.81	.68	49.4	78.2	25,333	66.4
Dispensing opticians	230	1,935	.48	1.12	.63	50.0	75.3	17,823	73.4
Advertising salesmen	565	4,325	.37	.99	.62	56.1	67.1	22,500	75.0
Optometrists	90	810	.18	.76	.57	54.7	60.6	33,250	61.2
Typesetters and compositors	1,625	6,170	.37	.93	.56	51.5	75.4	18,293	70.4
Telegraph operators	185	455	.33	.87	.55	65.0	74.9	23,285	80.0
Personnel and industrial relations management	445	11,190	.32	.84	.52	73.3	84.0	28,047	69.2
Financial management occupations	630	19,285	.24	.75	.51	79.8	90.8	26,188	64.2
Insurance salesmen and agents	4,155	21,610	.36	.86	.50	71.5	74.1	19,539	64.7
Business services salesmen	275	1,830	.33	.81	.48	63.7	75.2	24,615	80.5
Accountants, auditors, other financial officers	15,655	74,595	.44	.92	.47	67.6	81.3	24,304	68.7
Purchase officers and buyers except wholesale/retail trade	1,010	5,255	.25	.70	.45	75.0	81.7	22,250	71.2
Supervisors: sales occupations, services	2,005	8,370	.24	.69	.45	72.6	81.2	22,901	65.3
Production clerks	2,145	5,780	.49	.94	.45	62.0	73.0	20,183	73.8
Sales and advertising management occupations	465	21,185	.11	.54	.44	68.5	86.4	21,627	55.9
Weighers	660	1,695	.47	.88	.41	17.3	41.3	17,500	67.5
Bus drivers	3,045	16,125	.28	.69	.41	13.2	53.9	14,750	50.3
Salesmen and traders, securities	665	3,440	.25	.63	.38	66.7	72.6	20,677	50.7
Lawyers and notaries	785	9,135	.14	.51	.37	64.8	82.0	30,822	62.6
Services management occupations	185	4,025	.27	.64	.37	62.1	78.5	22,595	69.6

Sources: 1971 and 1986 Censuses of Canada

* Full-time, full-year employment only (49-52 weeks worked).

Table 4

Non-traditional occupations with greatest shift in male representation between 1971 and 1986; work status and median income in 1985

Occupation	Experienced labour force		Coefficients of representation			Work status		Median employment income*	
	1971	1986	1971 CoF (1)	1986 CoF (2)	Difference 1971-1986 (2)-(1)	% male, full-time, full-year	% female, full-time, full-year	Male income (\$)	Female as % of male income
All occupations	5,665,720	7,316,990				58.3	41.8	28,209	66.8
Total non-traditional	259,995	423,190				53.3	42.0	24,093	77.0
Textile winding and reeling occupations	660	860	.41	.71	.30	55.1	48.0	20,388	75.3
Office machine operators	4,350	3,320	.32	.55	.24	64.7	51.3	20,558	85.3
Electronic equipment fabricating and assembling occupations	2,485	5,740	.42	.66	.23	60.9	59.5	22,187	79.7
Supervisors: occupations in lodging and other accommodations	4,785	13,635	.45	.64	.20	61.7	45.7	19,090	76.7
Bookbinders and related occupations	2,165	3,195	.48	.61	.13	54.9	42.7	24,694	64.2
Dancers and choreographers	70	340	.29	.40	.11	28.2	16.1	--	--
Chambermaids and housemen	595	2,560	.07	.15	.09	39.9	22.9	13,999	85.1
Elementary and kindergarten teachers	25,900	36,830	.27	.34	.07	81.7	58.0	37,713	80.7
Technicians in library, museum, and archival sciences	450	965	.48	.54	.06	62.4	50.8	23,250	97.4
Telephone operators	1,305	2,120	.06	.12	.06	49.3	44.9	25,151	76.6

Sources: 1971 and 1986 Censuses of Canada

* Full-time, full-year employment only (49-52 weeks worked).

between women in the 21 selected non-traditional and all non-traditional occupations were not great, although women in the 21 tended to be younger and better educated.

Among men in the ten selected non-traditional occupations, there was a tendency to be older than the average male worker; half fell within the 35-54 age group. These men were also over three times more likely to possess a degree, principally

because half of them were teachers and 88.0% of these teachers were university graduates.

Income and work status of workers in non-traditional occupations

Because it has long been maintained that occupational sex segregation underlies much of the economic disparity between the

Table 5
Education and demographic characteristics of non-traditional workers and experienced labour force, 1986

	Female			Male		
	Top 21 non- traditional	All non- traditional	Experienced labour force	Top 10 non- traditional	All non- traditional	Experienced labour force
%						
Age						
15 - 24	11.9	17.5	23.6	11.3	28.6	19.8
25 - 34	42.3	36.1	29.9	26.6	28.4	28.5
35 - 54	39.6	38.3	37.6	51.4	33.2	38.9
55 +	6.1	8.1	9.0	10.7	9.7	12.8
Education						
Less than Grade 9	2.6	7.3	7.6	5.8	6.1	11.6
Grade 9 - 13	17.7	22.2	22.9	12.6	17.6	23.8
High school	17.2	15.2	16.3	6.9	12.4	12.2
Trade certificate	2.8	2.3	2.5	2.1	2.3	4.4
Some university/ community college	40.8	36.1	39.1	22.7	40.5	34.5
University degree	18.8	16.8	11.7	49.8	21.1	13.4
Marital status						
Married	64.1	63.1	61.4	70.6	53.3	66.1
Single	22.8	25.1	27.7	23.2	41.5	28.1
Separated, divorced, widowed	13.1	11.7	10.9	6.2	5.2	5.8

Source: 1986 Census of Canada

sexes, it is reasonable to ask, what were the economic benefits for women and men in non-traditional occupations? Some answers with respect to full-time work status and income⁷ can be provided, although they can only be considered tentative because we do not control for factors that are crucial determinants of employment income (for example, age, specific educational credentials, length of work experience).

Women in the non-traditional occupations were much more likely to work full-time, full-year than the average female worker; exceptions to this were bartenders, weighers and bus drivers. However, women were still less likely to work full-time than their male counterparts, regardless of occupation. The difference is particularly apparent in the case of bus drivers, where

13% of the women, compared to more than half of the men, worked full-time, full-year.

Many of these non-traditional occupations provided women with a much higher median income than the \$18,845 earned by the average female worker (Table 3). Again, there were exceptions to this. What is noticeable, however, is that in all non-traditional occupations women earned less than men. In many occupations, such as optometrists, securities salesmen/traders, and lawyers, the earnings differentials were substantial.

The proportion of men working full-time, full-year in all non-traditional occupations is lower than that for the average male worker. But no really clear pattern of work status emerges for men in the selected non-traditional occupations

(Table 4). Nevertheless, their median employment income was lower than the \$28,209 earned by the average male worker, with the exception of elementary and kindergarten teachers (\$37,713). Yet despite these jobs having traditionally been women's, men's earnings were higher in all the occupations for which full-time, full-year median incomes were calculated.

Conclusion

Over the period 1971 to 1986, occupational crossover occurred largely because women entered occupations non-traditional for their sex. Men, on the other hand, moved into non-traditional occupations at a slower rate. Both women and men in non-traditional occupations were slightly older and better educated than the average female or male worker. There were no significant differences in marital status.

In the non-traditional occupations identified as having the greatest influx of the minority sex, women tended to move into managerial, professional, and sales/service occupations. This was largely consistent with their changing educational patterns between 1971 and 1986. Men gravitated towards teaching, service, clerical and manufacturing occupations.

Comparing the full-time, full-year work status and income of workers in non-traditional occupations, it is evident that women earned higher incomes than the average female worker but less than men in the same occupation. Conversely, men generally earned more than women in the same field, but less than the average male worker. This, more than anything, may explain the slow movement of men into non-traditional jobs. □

Notes

¹ See Siltanen (1990) for a recent critique of research on occupational sex segregation.

² Data used in this study are based on the 1971 Occupational Classification Manual and the 1971 labour force definition.

³ The experienced labour force comprises persons who were working at the time of the Census or, if not working, had last worked during the Census year or the previous year and were on temporary lay-off or looking for work.

⁴ Despite its advantages over other statistical measures, the "difference" does not perfectly capture the

change occurring in such dynamic situations. (See Blackburn and Marsh, forthcoming.)

⁵ The coefficient of representation is the percentage of females (or males) in occupation *i* divided by the percentage of females (or males) in all occupations; that is, p_{fi}/PF (or p_{mi}/PM).

⁶ There are 486 detailed occupations in the 1971 census classification (OCM, 1971). In this analysis, four separate occupational groups have been collapsed into two, thus yielding a total of 484 occupations.

⁷ All income and work status figures are for full-time, full-year workers (49-52 weeks).

References

Blackburn, R.M. and C. Marsh. "Education and Social Class: Revisiting the 1944 Education Act with Fixed Marginals," *British Journal of Sociology*. London, G.B., forthcoming.

Boulet, J.-A. and L. Lavallée. *The Changing Economic Status of Women*. Ottawa: Economic Council of Canada, 1984.

Fox, B.J. and J. Fox. "Occupational Gender Segregation of the Canadian Labour Force, 1931-1981," *Canadian Review of Sociology and Anthropology*, Vol. 24, No. 3. Toronto, 1987, pp. 374-397.

Guppy, N., D. Balson and S. Vellutini. "Women and Higher Education in Canadian Society," *Women and Education: A Canadian Perspective*. Calgary, Detselig Enterprises, 1987, pp. 171-192.

References – Concluded

Krahn, H.J. and G.S. Lowe. *Work, Industry and Canadian Society*. Edmonton, University of Alberta, 1987.

Labour Canada. *Women in the Labour Force, 1986-87*. Ottawa, 1987.

Noyelle, T.J. "The New Technology and the New Economy: Some Implications for Equal Employment Opportunity," *Computer Chips and Paper Chips*, Vol. 2. Washington, D.C., 1987, pp. 373-394.

Organisation for Economic Co-operation and Development. *The Integration of Women into the Economy*. Paris, 1985.

Siltanen, J.L. "Social Change and the Measurement of Occupational Segregation by Sex: An Assessment of the Sex Ratio Index," *Work, Employment and Society*, Vol. 4, No. 1. London, G.B., March 1990.

Statistics Canada. *Education in Canada: A Statistical Review for 1987-88*, Cat. 81-229. Ottawa, 1989.

Statistics Canada. *Labour Force Activity*, Cat. 93-111. Ottawa, 1986.

Statistics Canada. *Occupational Trends, 1961-1986*, Cat. 93-151. Ottawa, November 1988.

Sources

A potpourri of information: survey news, including special surveys conducted as supplements to the Labour Force Survey; notes on research projects inside and outside Statistics Canada; recent publications and data releases; other items of news and future events.

National volunteer group publishes analysis of Survey of Volunteer Activity

In October 1987, the Secretary of State sponsored the national Survey of Volunteer Activity (SVA) in Canada. The survey was piggybacked onto the monthly Labour Force Survey, giving access to 56,000 respondent households, with the intent of determining how many Canadians do volunteer work, the type of work they do, and how frequently they donate their time. Reports based on the main findings are now available.

The Statistics Canada paper *Giving Freely* is described in the Winter 1989 issue of *Perspectives on Labour and Income*; to obtain an appreciation of the depth and range of the data in this study, read this issue's article "The gift of time". *Giving Freely* is available for \$28 from Publications Sales, Statistics Canada, Ottawa, K1A 0T6 (order no. 71-602.)

The National Voluntary Organizations (NVO), which represents the majority of charity and volunteer organizations in Canada, has recently published *A Profile of the Canadian Volunteer*. This report is

addressed to the large constituency that comprises the volunteer community and is available from the NVO for \$6 (\$3 for bulk orders of 50 or more). To order, please contact Rose Potvin at (613) 230-3080.

The history of the SVA actually goes back to the February 1980 Survey of Volunteer Workers. That survey was the first large-scale survey of volunteers ever done in Canada and was conducted by Statistics Canada as a supplement to the Labour Force Survey. The experience in design gained in 1980 was used to improve the methodology of the 1987 survey, but because of the methodological differences between them, data from the 1987 survey should not be considered comparable to the 1980 data.

The 1987 survey was developed following a lengthy period of consultation with a wide range of users. During these discussions, many groups expressed interest in the level of support provided by employers to volunteers in the workplace: did the private sector support volunteer action; and did it have explicit policies concerning employees who were volunteers?

The Conference Board of Canada conducted this employer survey with assistance from Secretary of State in February 1986. Among its findings were:

- 72% of respondents said that their employees carry out community-wide volunteer work (for example, United Way, Red Cross) and many of these activities take place during working hours.

- 69% encourage and support their employees' volunteer activities, particularly for charities, professional and business associations and Chambers of Commerce.
- 47% of employers who encourage volunteer efforts direct their company's donations or sponsorships to the volunteer organizations with which their employees are involved.
- only one-fifth of employers consider volunteer activity when evaluating an employee for promotion, but half consider it when making hiring decisions.

Employee Volunteerism: Employer Practices and Policies, Report 14-86E, is available for \$10 from The Conference Board of Canada at (613) 526-3280, ext. 241. □

Results of national literacy survey soon available

The preliminary results of the national survey of Literacy Skills Used in Daily Activities (LSUDA) will be released. The survey was conducted on behalf of Secretary of State to determine how well Canadians perform certain daily tasks requiring different levels of reading and writing skills.

For the purpose of the survey, literacy was defined as "the information processing skills necessary to use the printed material commonly encountered at work, at home and in the community". The survey was therefore measuring functional literacy, that is, how people coped with literacy tasks encountered every day. Measures of what might be termed "academic literacy" were explicitly avoided.

Literacy was broken down into three components – reading, writing and numeracy – and respondents were set a number of everyday tasks to measure their capability in each area; for instance, they were asked to read a grocery ad, follow instructions on a medicine bottle, make a bank deposit, read and summarize a newspaper article, write a letter of complaint and fill in a mail order coupon. The questionnaires accompanying the tasks collected information about education, labour force status, language, reading and writing requirements at work, perceived needs and type of training requirements and a wide variety of other information.

The everyday tasks used in the survey were designed according to pre-defined typologies of reading, writing and numeracy abilities. When completed, the LSUDA does not provide a direct measure of the respondent's literacy. Instead, a technique established in the field (Item Response Theory) is used to convert the answers into a scale that provides information about the respondent's overall performance – what he or she can do and probably cannot do.

The scale for reading ability was established at one of four levels, from:

Level 1 – ability to pick out/recognize key words or short phrases (read a road sign warning of danger) to

Level 4 – ability to make deductions and draw conclusions from a text (summarize the theme and main arguments of a newspaper article).

Writing ability was defined on a scale of three levels, from:

Level 1 – ability to write single key words or phrases (write a simple set of instructions) to

Level 3 – ability to organize text incorporating one or more themes (write a letter of complaint).

Numeracy was defined on a scale of four levels, from:

Level 1 – ability to locate/recognize numbers in isolation or in short text (find a telephone number in the Yellow Pages) to

Level 4 – ability to perform a sequence of arithmetic operations required to solve a problem without the operations being explicitly specified (complete a mail order coupon for multiple quantities of goods, calculate sales tax and compute the final total).

The use of reading, writing and numeracy levels will provide for a meaningful focus on the literacy abilities of Canadians, thereby allowing the identification of different clienteles and associated remedial programs.

The sample size was close to 14,000 individuals. Interviews in respondents' homes were held in October 1989 and the overall response rate was around 70%. Selected respondents were recent participants in the LFS; the LSUDA data will therefore be supplemented with information on the respondent's labour market activity in the past year, his or her present or last occupation and industry, as well as indication and duration of joblessness or job tenure.

The data are available in two formats: microdata files for very detailed manipulation and analysis; and an analysis of the main findings by major variables such as province, language of interview and demographic characteristics. A second analytical report, as yet untitled, is scheduled for release in late summer to mark International Literacy Day (September 8).

For more information about the literacy survey, please contact Gilles Montigny of Statistics Canada at (613) 951-9731, or Tom Brecher of Secretary of State at (819) 953-5283. □

Survey of training in private sector completed

An analytical report on the Human Resource Training and Development Survey (HRTD) of employee training in the private sector is now available. This groundwork information will be used by the survey's sponsor, Employment and Immigration Canada (EIC), to assess private industry training and to guide policy development in the future.

HRTD collected information from companies on variables such as occupation of trainees, reasons why employers trained their employees, and the type of training received. It also sought to distinguish firms that train from those that do not on the basis of industry, province and size of the firm's work force. The survey excluded federal and provincial government departments and companies in the government-related sector, that is, companies and institutions involved in education, health and social services, and so on.

Data were collected over the period from February to August 1988. Respondents were asked to describe their company's training activity from November 1986 to October 1987. Questionnaires were sent to over 14,500 potential respondents, with the sample split almost evenly between small firms (fewer than 50 employees) and large firms (more than 50 employees). Response rates for small firms averaged 47%; for larger companies the rate was 66%.

The findings show that:

- the private sector spent almost \$1.4 billion to train its employees; almost 45% of it is spent by fewer than 500

companies with over 1,000 workers, while 39% is spent by over 223,000 firms with fewer than 100 employees.

- large companies were three times more likely than small ones to provide training to their employees – 75% of firms with over 100 employees compared to 27% with fewer than 10; 92% of companies with 1,000 or more workers offered training to their employees.
- almost 40% of employers providing training were in service industries and 25% were in retail trade.
- despite the heavier investment in training made by larger firms, they were most likely to report that their training needs were not being met; this increased steadily with firm size – 51% of employers with over 1,000 employees compared to 25% of firms with fewer than 100 employees.
- among those companies that did train their employees, 44% of the large firms (over 1,000 employees) and 23% of the small firms (those with less than 100 employees) said the reason for training was the introduction of new technologies.

For further information about the Human Resource Training and Development Survey, contact Doug Higgins at (613) 951-5870. □

Research Paper Series examines Canadian manufacturing jobs

Three research papers recently published by Statistics Canada's Analytical Studies Branch address the question of employment in the Canadian manufacturing sector over

the past 15 years. The papers are all offshoots of a multi-year study of structural change and adjustment processes with particular reference to Canada's manufacturing sector. Both authors are "on loan" from research institutes – Dr. John R. Baldwin from Queen's University and Dr. Paul K. Gorecki from the Economic Council of Canada.

Research Paper No. 22, 1989

Job Turnover in Canada's Manufacturing Sectors

This paper examines the ebb and flow in employment within an industry and between different industries. The study covers the 1970s to the early 1980s and focuses on two questions: how large a shift in employment has the economy absorbed in the past; and, can a pattern be discerned in the adjustment process?

In contrast to the more usual approach that studies the subject only at two points spanning a five- or ten-year period, this report also analyzes changes from year to year. It shows that substantial short-term turmoil is often hidden by long-term analyses that tend to smooth out the cyclical changes inherent in a market economy. Highlights of the study show that:

- each year between 1970 and 1981, 5.4% of manufacturing establishments left that sector by closing down while 4.1% entered it.
- the annual job turnover rate (gross job loss plus gross job gain) showed that 17.7%, or almost one in five workers, was affected by the growth or decline of their employers.
- on an annual basis, establishments that stayed in business over the decade had a greater impact on employment than those that entered or left: 1.9% of

manufacturing jobs were lost when plants closed, compared to 6.5% lost when plants simply reduced operations; similarly, 1.6% of total employment was created by new plants entering the sector, but 7.6% was generated by existing plants expanding the size of their work forces.

Research Paper No. 23, 1989

Firm Entry and Exit in the Canadian Manufacturing Sector

This paper examines the impact that firm entry and exit has on the structure of industry, employment and the behaviour of firms. Using a specially constructed database from the Census of Manufactures, it seeks to answer questions such as: what is the survival rate of new firms, how large are they, how many jobs do they create, and so on. Among its findings are:

- new firms affected 2% of employment a year – 0.9% through new plants and 1.1% through acquisition; exiting firms affected 3.4% of employment – 1.2% by closure and 2.2% by divestiture.
- the average size of new firms entering the industry was 20 employees, compared to 223 when the firm came onstream through an acquisition; similarly, the number of employees affected when a firm closed averaged 26, compared to 168 when a firm exited via divestiture.

Research Paper No. 25, 1989

Dimensions of Labour Market Change in Canada

This study examines change in the labour market from three perspectives: shifts in employment from one industry to another; shifts in employment from one firm to

another in the same industry; the reason for workers leaving their jobs with a firm. The results show that rates of job loss vary depending on the perspective from which the data are viewed. For example, employment loss in declining manufacturing industries was 2% per year in the 1970s, but it was 9% at the establishment level of those declining industries, while the worker separations rate was almost 50%. Highlights of the study include:

- from 1970 to 1981, job loss in all declining manufacturing industries averaged 2.1% per year.
- net employment growth in establishments that operated continuously from 1970 to 1981 averaged 1.1% per year.
- gross job gain averaged 9.2% a year over the decade and offset the gross job loss of 8.4%.
- the total separations rate (number of worker separations divided by number of jobs) averaged 46% per year, and one-quarter of these were permanent separations in which the worker did not return to the same employer within two years of leaving.

To obtain free copies of these research papers, or for further information about the research program, contact Marie-Claire Couture at (613) 951-3778. □

Sample size of LFS increases by one-third

Statistics Canada has enlarged the size of its Labour Force Survey (LFS) sample by 16,650 households. The increased coverage from 48,000 to 64,650 represents a 34% growth in the number of households participating in the monthly LFS.

The LFS sample size has jumped in response to changes in the Unemployment Insurance regulations which have redrawn the boundaries of Canada's economic regions to include 14 more regions. This brings to 62 the number of regions for which Statistics Canada has to produce reliable estimates of unemployment rates for Employment and Immigration Canada (EIC). The estimates are used by EIC to set the number of weeks claimants must work before qualifying for benefits and to establish the length of time beneficiaries may receive UI once their claims have been accepted. Because they serve this crucial function, EIC has requested that Statistics Canada ensure that the unemployment estimates for all 62 regions meet a minimum standard of statistical reliability (in this case, the estimate of the unemployment rate is unlikely to be more than 15% above or below the true rate of unemployment in the region 68 times out of 100). To meet this requirement, the size of the LFS sample was increased in all provinces except Prince Edward Island; however, over three-quarters of the increase occurred in Quebec and Ontario.

The new regions now comprise 26 CMAs (Ottawa and Hull are split into separate regions) and 36 other regions containing smaller urban and rural areas. The separation of large urban centres from the surrounding areas addresses concerns that the estimates covering rural areas were skewed by the overwhelming influence of the nearby city, where unemployment is generally lower. The new boundaries of the regions thus produce more homogeneous areas possessing similar economic conditions and labour market characteristics.

The increases were introduced in steps to allow them to be absorbed more easily into the regular LFS cycle. All 16,650 new households were added in time for the April LFS.

Despite the increase in the sample and all the attendant complexities of data collection and editing, the timeliness of the labour force estimates has not been impaired. The preliminary figures are still released 13 days after the conclusion of the interviews.

For more information about the LFS, please contact Ken Bennett at (613) 951-4720. □

New institute tries to balance environmental and economic goals

Everyone is agreed that the protection of the environment is of paramount importance in this decade. But it is hard to come to agreement on what that means – and how we can maintain/reclaim the quality of the environment without sacrificing economic growth and our standard of living.

The new Institute for Research on Environment and the Economy (IREE) hopes to break the impasse by developing statistical concepts and measures that quantify the impact of environmental stress on the quality of human life. The Institute's aim is to develop "environment indicators" – the ecological equivalents of familiar economic indicators like the unemployment rate and gross domestic product. The founders hope that by producing hard data about the interaction between the environment and the economy, IREE will "support the information needs of those policies aimed at sustainable development objectives". That is, to provide decision-makers in both the public and private sectors with the information needed to prepare and implement effective policies to safeguard the environment.

The Institute's activities in the first few years of its mandate will focus on four main areas: (1) ecological indicators and integrity of ecosystem structure; (2) environmental and natural resource

accounts; (3) environmental education, communication and policy; and, (4) environment and economy linkages.

The Institute is ideally situated to do this. Located at the University of Ottawa, IREE is at the hub of a whole network of departments and agencies whose responsibilities intimately link economic progress to the quality of the environment, for example Agriculture Canada, Energy Mines and Resources, Fisheries and Oceans Canada, Transport Canada and a host of others. Most of these departments also have strong academic connections with the university.

Start-up costs have been provided by Environment Canada, Statistics Canada and the University of Ottawa. In the next few years, IREE will become self-sufficient by pursuing revenue-generating projects, especially in the Third World. Hard

information on the environmental impact of economic development is particularly important in countries that are not yet industrialized, and having new statistical systems such as the Natural Resource Accounts to balance the System of National Accounts would help decision-makers to devise environmentally healthy development strategies.

In the meantime, IREE members are planning a series of workshops to stimulate new thinking about environmental and economic problems and to make recommendations to government about dealing with them. Membership is open to all interested people in the business, scientific and academic communities.

For more information about the Institute and its work, please contact Anthony Friend or Philippe Crabbe at (613) 564-7644. □



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Key labour and income facts

The following selection of labour and income indicators is drawn from 11 sources and includes published and unpublished annual data. The first 53 indicators appear in every issue and the remainder address a different topic each time.

The latest available annual data are always shown; as results become available, the indicators are updated so that every issue contains new data. An indicator updated since the last issue is "flagged" with an asterisk.

Data sources

The indicators are derived from the following sources:

- 1-11 & 15 Labour Force Survey**
Frequency: Monthly
Contact: Ken Bennett (613) 951-4720
- 12-14 Labour Market Activity Survey**
Frequency: Annual
Contact: Richard Veevers (613) 951-4617
- 16 Absence from Work Survey**
Frequency: Annual
Contact: Denis Lefebvre (613) 951-4600
- 17 Workers' Compensation Statistics**
Frequency: Annual
Contact: Joanne Proulx (613) 951-4040
- 18 Help-wanted Index**
Frequency: Monthly
Contact: André Picard (613) 951-4045
- 19-21 Unemployment Insurance Statistics**
Frequency: Monthly
Contact: André Picard (613) 951-4045
- 22-29 Survey of Employment, Payrolls and Hours**
Frequency: Monthly
Contact: Howard Krebs (613) 951-4063

- 30-32 Labour Canada, Major Wage Settlements**
Frequency: Quarterly
Contact: Gilles Léger (819) 953-4234
- 33-35 Labour Income (Revenue Canada Taxation-based statistics, Survey of Employment, Payrolls and Hours and other surveys)**
Frequency: Quarterly
Contact: Ed Bunko (613) 951-4048
- 36-46 Survey of Consumer Finances**
Frequency: Annual
Contact: Kevin Bishop (613) 951-2211
- 47-53 Household Facilities and Equipment Survey**
Frequency: Annual
Contact: Penny Barclay (613) 951-4634
- 54-55 Small Business and Special Surveys Division**
Frequency: Semi-annual
Contact: Michael Issa (613) 951-9422

Notes on the method of deriving certain indicators are given at the end of the table.

Additional data

The table provides at the most two years of data for each indicator. A longer time series (generally ten years) for this set of indicators can be obtained on request on paper or diskette at a cost of \$50. (A more extensive explanation of the indicators is also available.) This ten-year data set will be updated annually in April. Contact: Suzanne David (613) 951-4627.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Labour Market							
1 Labour force	'000	1988	13,275	231	62	408	318
		1989	13,503	238	63	414	325
Change	%		1.7	3.2	2.6	1.4	2.1
2 Participation rate	%	1988	66.7	54.6	64.0	60.8	58.8
		1989	67.0	55.7	65.0	61.2	59.5
3 Employed	'000	1988	12,245	193	54	366	280
		1989	12,486	201	54	373	284
Change	%		2.0	4.0	-	1.8	1.6
4 Proportion of employed working part-time	%	1988	15.4	11.2	15.0	15.5	15.4
		1989	15.1	11.5	15.7	16.0	14.9
5 Proportion of part-timers wanting full-time work	%	1988	23.7	58.8	34.5	35.5	36.4
		1989	22.2	55.1	36.1	31.5	37.5
6 Unemployed	'000	1988	1,031	38	8	42	38
		1989	1,018	38	9	41	41
Change	%		-1.3	-	11.4	-1.8	6.1
7 Official unemployment rate	%	1988	7.8	16.4	13.0	10.2	12.0
		1989	7.5	15.8	14.1	9.9	12.5
Alternative Measures of Unemployment							
8 Unemployed 14 or more weeks as a proportion of the labour force	%	1988	3.1	7.7	5.2	4.2	4.8
		1989	2.9	6.8	5.3	3.8	4.9
9 Unemployment rate:							
- of persons heading families with children under age 16	%	1988	6.9	15.8	13.7	9.6	11.2
		1989	6.8	15.6	14.2	9.2	11.8
- excluding full-time students	%	1988	7.6	16.6	13.4	10.0	11.9
		1989	7.4	15.8	14.6	9.8	12.4
- including full-time members of the Canadian Armed Forces	%	1988	7.7	16.4	12.8	9.9	11.8
		1989	7.5	15.7	13.9	9.6	12.3
- of the full-time labour force	%	1988	9.4	19.3	16.0	12.7	14.6
		1989	9.0	18.6	17.4	12.1	15.0
- of the part-time labour force	%	1988	9.8	17.1	7.2	12.8	13.2
		1989	9.7	15.8	8.2	12.3	14.4
- including persons on the margins of the labour force	%	1988	8.5	20.2	15.0	11.1	14.0
		1989	8.2	18.9	16.1	10.8	14.1
10 Underutilization rate based on hours lost through unemployment and underemployment	%	1988	9.9	20.1	16.5	13.4	15.2
		1989	9.5	19.3	17.8	12.8	15.6
11 Proportion unemployed 6 months or longer	%	1988	20.2	23.9	16.2	21.0	19.9
		1989	20.1	21.3	14.1	18.0	19.2

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
3,311	5,118	535	488	1,290	1,514	..	..	1988	'000	1
3,343	5,214	538	482	1,308	1,578	..	..	1989		
0.9	1.9	0.6	-1.1	1.4	4.2	..	..		%
64.0	69.6	66.7	66.4	72.4	65.7	..	..	1988	%	2
64.0	69.8	67.0	66.2	72.4	66.8	..	..	1989		
3,001	4,862	494	451	1,187	1,358	..	..	1988	'000	3
3,031	4,949	498	446	1,214	1,435	..	..	1989		
1.0	1.8	0.9	-1.1	2.3	5.7	..	..		%
13.6	15.6	16.9	17.1	15.5	17.9	..	..	1988	%	4
13.5	15.5	17.2	16.6	15.3	16.2	..	..	1989		
32.6	15.3	21.7	26.5	20.4	28.6	..	..	1988	%	5
31.8	13.5	21.9	27.9	19.3	25.8	..	..	1989		
311	256	42	37	103	157	..	..	1988	'000	6
311	264	41	36	94	144	..	..	1989		
-	3.2	-2.5	-2.1	-8.9	-8.3	..	..		%
9.4	5.0	7.8	7.5	8.0	10.3	..	..	1988	%	7
9.3	5.1	7.5	7.4	7.2	9.1	..	..	1989		
4.4	1.5	2.9	3.1	3.0	4.4	..	..	1988	%	8
4.3	1.5	3.0	3.1	2.5	3.6	..	..	1989		
										9
8.1	4.4	6.2	6.5	7.3	9.4	..	..	1988	%	
7.8	4.7	6.0	7.4	6.5	8.3	..	..	1989		
9.3	4.7	7.5	7.4	7.8	10.3	..	..	1988	%	
9.3	4.9	7.3	7.3	7.0	8.9	..	..	1989		
9.4	5.0	7.7	7.5	7.9	10.3	..	..	1988	%	
9.3	5.0	7.5	7.4	7.1	9.0	..	..	1989		
11.5	5.8	9.2	9.6	9.2	12.8	..	..	1988	%	
11.3	5.8	9.2	9.6	8.3	10.8	..	..	1989		
10.6	8.2	10.9	9.4	11.2	11.2	..	..	1988	%	
10.7	8.0	9.8	9.7	9.9	12.3	..	..	1989		
10.6	5.3	8.3	8.0	8.3	10.8	..	..	1988	%	
10.5	5.3	8.0	8.0	7.5	9.5	..	..	1989		
11.9	6.3	9.9	10.2	9.8	13.3	..	..	1988	%	10
11.7	6.2	9.7	10.2	8.9	11.3	..	..	1989		
25.7	12.7	16.6	20.8	19.0	22.0	..	..	1988	%	11
27.0	13.2	20.6	20.4	17.4	20.6	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Other Labour Market Indicators								
12	Employed at some time in the year, male, age 16 to 69	'000	1986	7,560	151	36	235	191
	– as proportion of male population age 16 to 69	%		87.4	80.7	87.8	82.7	82.0
	Employed at some time in the year, female, age 16 to 69	'000	1986	5,987	109	29	187	149
	– as proportion of female population age 16 to 69	%		67.4	58.0	69.0	62.1	61.8
13	Unemployed at some time in the year, male, age 16 to 69	'000	1986	1,601	63	11	63	56
	– as proportion of male population age 16 to 69	%		18.5	33.7	26.8	22.2	24.0
	Unemployed at some time in the year, female, age 16 to 69	'000	1986	1,441	45	9	58	46
	– as proportion of female population age 16 to 69	%		16.2	23.9	21.4	19.3	19.1
14	Full-time, full-year male paid workers	'000	1986	4,039	53	14	117	90
	Full-time, full-year female paid workers	'000	1986	2,468	35	10	71	53
15	Days lost per full-time worker per year through illness or for personal reasons	days	1988	9.2	9.1	6.7	8.6	8.7
			1989	9.4	9.6	8.1	8.6	9.6
16	Proportion of paid workers absent two or more consecutive weeks because of illness or accident	%	1987	6.3	4.4	5.1	6.1	6.4
			1988	6.4	5.1	5.7	4.7	6.0
17	Workers receiving workers' compensation for time-loss injuries	'000	1987	603	9	2	12	11
	Change	%	1988	618	10	2	11	12
				2.6	11.3	17.7	-4.4	11.0
18	Help-wanted index (1981 = 100)		1987	135	156			
			1988	149	180			
Unemployment Insurance								
19	Total beneficiaries	'000	1987	1,033	68	13	51	57
	Change	%	1988	1,015	71	13	50	57
				-1.8	5.2	0.7	-2.0	0.9
*20	Total beneficiaries as a proportion of contributors	%	1987	8.2	28.4	22.0	13.0	17.9
			1988	7.9	28.7	21.2	12.4	17.6
21	Regular beneficiaries without reported earnings	'000	1987	800	55	10	40	46
	Change	%	1988	780	58	10	38	47
				-2.5	5.2	0.1	-2.8	1.6

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
1,928 84.5	2,850 90.0	306 89.0	289 90.0	733 90.4	843 85.6	.. ..	.. ..	1986	'000 %	12
1,434 60.6	2,331 71.4	256 72.1	229 71.6	601 74.9	661 65.8	.. ..	.. ..	1986	'000 %	
459 20.1	457 14.4	58 13.8	50 13.7	167 17.3	217 19.1	.. ..	.. ..	1986	'000 %	13
377 15.9	482 14.8	49 13.8	44 13.7	139 17.3	192 19.1	.. ..	.. ..	1986	'000 %	
1,013	1,682	154	130	370	416	..	..	1986	'000	14
632	998	109	80	237	242	..	..	1986	'000	
9.5 10.2	9.7 9.6	9.7 8.8	7.5 8.6	8.3 8.2	7.7 8.4	.. ..	.. ..	1988 1989	days	15
7.4 8.1	6.1 6.2	6.0 6.2	4.0 5.2	5.9 5.5	6.2 5.5	.. ..	.. ..	1987 1988	%	16
217 218 0.6	205 208 1.6	23 23 0.5	16 15 -5.3	41 43 5.1	66 73 10.9	.. .. ..	1 1 19.0	1987 1988	'000 %	17
155 172	167 180	69 82			79 96	.. ..	.. ..	1987 1988		18
316 323 2.2	231 216 -6.4	33 35 3.7	29 29 0.2	90 78 -12.9	142 139 -2.3	2 2 -2.9	2 2 -10.8	1987 1988	'000 %	19
10.2 10.2	4.6 4.2	6.8 7.1	7.8 7.5	7.7 6.5	10.6 9.9	10.5 9.8	5.4 4.8	1987 1988	%	20
252 259 2.5	166 151 -9.0	25 26 3.2	22 22 -1.1	70 60 -14.1	111 106 -3.9	1 1 -3.8	1 1 -13.6	1987 1988	'000 %	21

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Earnings (including overtime) and Hours								
*22	Average weekly earnings in current dollars	\$	1988	463.80	443.99	379.26	417.92	421.15
			1989	486.90	466.05	401.00	432.79	442.78
	Change	%		5.0	5.0	5.7	3.6	5.1
*23	Average weekly earnings in 1981 dollars	\$	1988	322.53	320.57	278.05	298.09	298.26
			1989	322.45	325.00	283.19	295.42	299.58
	Change	%		--	1.4	1.8	-0.9	0.4
*24	Average weekly earnings of salaried employees in current dollars	\$	1988	568.10	524.26	493.20	516.66	523.26
			1989	598.96	560.22	523.22	537.12	552.16
	Change	%		5.4	6.9	6.1	4.0	5.5
*25	Average weekly earnings of salaried employees in 1981 dollars	\$	1988	395.06	378.53	361.58	368.52	370.58
			1989	396.66	390.67	369.51	366.63	373.59
	Change	%		0.4	3.2	2.2	-0.5	0.8
*26	Average weekly earnings of hourly paid employees in current dollars	\$	1988	370.45	353.66	256.22	330.64	342.13
			1989	388.20	363.30	264.65	341.66	362.56
	Change	%		4.8	2.7	3.3	3.3	6.0
*27	Average weekly earnings of hourly paid employees in 1981 dollars	\$	1988	257.61	255.35	187.84	235.83	242.30
			1989	257.09	253.35	186.90	233.22	245.30
	Change	%		-0.2	-0.8	-0.5	-1.1	1.2
*28	Average weekly hours of hourly paid employees	hrs	1988	32.1	35.5	32.6	33.0	34.0
			1989	31.8	34.7	31.5	32.6	34.1
*29	Average weekly overtime hours of hourly paid employees	hrs	1988	1.1	1.7	0.5	0.7	0.9
			1989	1.2	1.6	0.4	0.8	1.0
Major Wage Settlements								
30	Number of agreements		1988	542	8	2	9	12
31	Number of employees	'000	1988	1,192	22	5	7	14
32	Increase in base rate on annual basis	%	1988	4.3	4.1	4.8	4.9	4.1
Labour Income								
33	Labour income in current dollars	\$ million	1987	296.0	3.9	0.9	7.3	5.7
			1988	322.7	4.2	0.9	7.9	6.1
	Change	%		9.0	8.0	8.4	7.6	7.7
34	Labour income per employee in current dollars	\$	1987	28,500	24,700	20,200	23,800	23,600
			1988	30,100	24,800	21,200	24,500	24,600
	Change	%		5.5	0.6	4.9	2.9	4.1
35	Labour income per employee in 1981 dollars	\$	1987	20,600	18,300	15,400	17,600	17,300
			1988	20,900	17,900	15,600	17,500	17,400
	Change	%		1.4	-1.8	1.1	-0.7	0.5
36	Net income from self-employment as a proportion of money income	%	1986	6.0	5.7	8.6	6.2	5.4
			1987	6.7	4.9	12.4	6.6	4.3

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
454.01	482.68	422.05	411.30	462.76	466.52	556.24	621.17	1988	\$	22
472.72	509.12	445.15	426.19	484.47	491.93	587.09	664.27	1989		
4.1	5.5	5.5	3.6	4.7	5.4	5.5	6.9		%	
313.11	327.46	297.01	291.91	338.27	339.78	..	..	1988	\$	23
312.65	326.36	299.16	289.73	339.98	342.81	..	..	1989		
-0.1	0.3	0.7	-0.7	0.5	0.9	..	..		%
540.82	595.71	536.17	527.58	585.04	564.90	666.78	695.96	1988	\$	24
564.62	631.18	562.88	558.93	617.91	594.76	715.65	729.53	1989		
4.4	6.0	5.0	5.9	5.6	5.3	7.3	4.8		%	
372.98	404.15	377.32	374.44	427.66	411.43	..	..	1988	\$	25
373.43	404.60	378.28	379.97	433.62	414.47	..	..	1989		
0.1	0.1	0.3	1.5	1.4	0.7	..	..		%
372.12	384.77	321.24	301.31	340.60	390.19	437.86	521.54	1988	\$	26
387.79	403.33	345.74	309.79	355.87	412.73	439.56	568.73	1989		
4.2	4.8	7.6	2.8	4.5	5.8	0.4	9.0		%	
256.63	261.04	226.07	213.85	248.98	284.19	..	..	1988	\$	27
256.47	258.54	232.35	210.60	249.73	287.62	..	..	1989		
-0.1	-1.0	2.8	-1.5	0.3	1.2	..	..		%
32.8	32.5	30.7	28.7	30.8	30.2	32.9	33.3	1988	hrs	28
32.6	32.0	31.2	28.8	30.5	30.4	32.0	33.8	1989		
1.0	1.3	0.8	0.8	1.4	0.9	2.8	4.9	1988	hrs	29
1.0	1.3	0.9	0.8	1.5	1.1	1.9	3.4	1989		
70	187	38	16	60	66	..	..	1988		30
204	323	66	62	132	144	..	..	1988	'000	31
4.3	5.3	3.7	2.8	3.1	5.2	..	..	1988	%	32
72.9	126.4	10.8	8.2	27.0	31.8	1.1		1987	\$ million	33
79.5	139.0	11.5	8.6	29.3	34.5	1.2		1988		
9.2	10.0	6.5	4.5	8.2	8.4	9.1			%	
28,300	30,200	26,100	24,200	27,300	28,100	..	..	1987	\$	34
29,900	32,100	27,500	24,800	28,900	29,100	..	..	1988		
5.8	6.3	5.5	5.8	5.8	3.6	..	..		%
20,200	21,500	19,100	17,900	20,500	21,200	..	..	1987	\$	35
20,600	21,800	19,400	17,600	21,100	21,200	..	..	1988		
2.0	1.5	1.3	-1.6	3.0	--	..	..		%
5.2	5.7	6.9	12.3	5.7	6.6	..	..	1986	%	36
5.8	6.2	7.6	13.4	7.9	7.3	..	..	1987		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Earnings of Full-time, Full-year Workers								
*37	Average earnings of men working full-time, full-year	\$	1987	31,900	27,700	25,200	30,300	27,600
			1988	33,600	27,200	23,600	30,500	29,100
	Change	%		5.3	9.0	-6.3	0.5	5.3
*38	Average earnings of women working full-time, full-year	\$	1987	21,000	17,900	17,900	18,500	18,100
			1988	21,900	20,400	16,900	19,600	20,200
	Change	%		4.3	14.3	-5.5	6.1	11.6
*39	Ratio of female to male earnings	%	1987	65.9	64.5	71.1	61.0	65.6
			1988	65.3	75.1	71.7	64.4	69.5
Family Income								
*40	Average family income	\$	1987	43,600	33,700	34,800	38,100	35,200
			1988	46,200	36,100	34,500	39,700	37,300
*41	Median family income	\$	1987	38,900	29,800	30,900	34,300	31,800
			1988	41,200	32,900	30,700	36,400	33,300
*42	Average income of unattached individuals	\$	1987	18,700	14,600	13,800	15,900	13,700
			1988	19,600	17,000	14,400	16,000	16,100
*43	Median income of unattached individuals	\$	1987	14,400	10,000	10,600	11,600	10,500
			1988	15,000	12,900	12,000	11,300	12,100
*44	Proportion below the low income cut-off (1978 base):							
- families	%		1987	11.3	18.9	10.0	11.7	14.4
			1988	10.5	15.5	10.0	10.8	12.6
- unattached individuals	%		1987	33.5	45.3	32.9	37.7	45.6
			1988	33.1	35.5	33.2	39.4	35.7
- persons (population)	%		1987	14.1	20.8	12.9	14.7	16.9
			1988	13.1	16.7	12.3	13.4	14.5
- children (less than 16 years)	%		1987	16.9	25.9	16.1	16.8	20.5
			1988	15.4	20.7	12.6	15.2	18.3
- elderly (65 years and over)	%		1987	17.3	20.4	12.3	15.8	18.2
			1988	17.2	19.2	17.5	16.9	15.0
45	Average family taxes	\$	1986	7,200	4,300	4,400	5,700	4,800
			1987	8,100	5,100	5,000	6,600	5,500
46	Average family income after tax	\$	1986	34,000	26,100	27,600	29,700	28,500
			1987	35,500	28,600	29,800	31,600	29,700

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
30,700	33,600	27,900	27,000	32,000	32,900	..	..	1987	\$	37
31,700	35,900	29,700	28,400	33,800	34,500	..	..	1988		
3.4	6.8	6.5	5.2	5.6	4.8	..	..		%
20,500	22,000	19,200	17,900	20,800	21,900	..	..	1987	\$	38
20,900	23,300	20,200	19,200	22,100	21,300	..	..	1988		
2.1	5.8	5.4	7.1	6.0	-2.8	..	..		%
66.8	65.4	68.6	66.3	65.1	66.7	..	..	1987	%	39
65.9	64.8	67.9	67.5	65.3	61.8	..	..	1988		
40,100	49,000	39,700	39,100	44,400	42,600	..	..	1987	\$	40
41,300	52,800	43,100	40,400	46,300	45,300	..	..	1988		
35,500	43,800	35,800	35,100	40,000	38,000	..	..	1987	\$	41
36,900	47,300	37,400	35,400	41,700	42,000	..	..	1988		
17,100	20,700	16,900	16,600	19,200	18,900	..	..	1987	\$	42
17,400	21,700	17,100	17,100	20,500	21,000	..	..	1988		
12,600	16,200	12,500	12,900	15,000	15,900	..	..	1987	\$	43
12,100	17,400	13,800	13,200	15,700	17,300	..	..	1988		
										44
13.9	7.8	11.9	12.4	12.7	13.0	..	..	1987	%	
13.5	7.5	11.1	13.6	10.7	10.1	..	..	1988		
40.7	28.5	35.9	33.4	31.5	31.2	..	..	1987	%	
42.7	26.9	33.5	29.3	30.8	30.6	..	..	1988		
16.8	10.3	15.9	15.9	15.6	15.7	..	..	1987	%	
16.8	9.5	14.8	16.8	13.8	13.2	..	..	1988		
19.0	12.3	21.9	18.9	19.9	18.6	..	..	1987	%	
17.2	11.9	19.7	22.6	16.9	15.2	..	..	1988		
25.2	12.7	15.4	13.9	13.8	19.9	..	..	1987	%	
25.2	12.6	16.0	13.4	15.6	18.4	..	..	1988		
6,800	8,400	5,900	6,000	7,300	6,800	..	..	1986	\$	45
7,700	9,300	6,700	6,500	8,400	7,800	..	..	1987		
31,300	37,400	31,900	31,000	36,500	33,800	..	..	1986	\$	46
32,400	39,700	34,500	33,000	32,600	36,000	..	..	1987		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Households & Dwellings								
*47	Average household income	\$	1987 1988	38,500 40,700	31,700 34,200	31,300 31,100	34,100 35,400	31,900 34,300
48	Proportion of households with:							
-	VCRs	%	1988 1989	52.0 58.8	50.0 59.9	43.2 50.0	51.8 62.1	51.3 57.0
-	microwaves	%	1988 1989	53.8 63.4	34.3 52.1	45.5 47.7	48.5 62.5	48.3 59.9
-	two or more automobiles	%	1988 1989	25.1 25.0	14.5 12.6	22.7 22.7	18.4 21.0	20.6 18.6
-	vans and trucks	%	1988 1989	24.3 25.5	31.3 32.3	31.8 31.8	25.6 28.2	34.9 34.3
-	air conditioners	%	1988 1989	20.8 24.6	... ...	-- ...	3.6 2.6	4.6 5.8
49	Proportion of owner-occupied dwellings	%	1988 1989	62.5 63.3	77.1 79.6	75.0 75.0	70.9 71.5	76.5 75.2
50	Proportion of all owner-occupied dwellings that are mortgage-free	%	1988 1989	50.0 50.6	72.7 69.9	54.5 54.5	56.2 56.6	56.0 59.3
51	Number of occupied dwellings in need of repair	'000	1988 1989	2,469 2,369	56 52	14 14	110 94	75 79
52	Dwellings in need of repair as a proportion of all occupied dwellings	%	1988 1989	26.7 25.0	33.7 31.1	31.8 31.8	35.6 30.4	31.5 32.6
53	Median rent-to-income ratio	%	1987 1988	20 21	18 18	24 22	22 23	20 22
Employees and Payrolls by Business Size (January to June averages)								
54	Total number of employees							
-	All firms	'000	1988 1989	9,988.0 10,271.9	140.0 143.2	34.8 35.9	274.9 291.6	210.5 218.8
-	less than 20	'000	1988 1989	2,141.1 2,292.2	25.7 26.8	8.9 8.2	58.1 60.8	49.8 48.8
-	20-49	'000	1988 1989	984.2 1,058.2	9.8 11.0	3.6 3.5	23.0 28.2	18.7 19.9
-	50-99	'000	1988 1989	745.4 760.8	8.1 8.7	3.2 3.6	16.7 18.1	14.1 13.0
55	Total gross weekly payrolls							
-	All firms	\$'000	1988 1989	4,591,158.5 4,929,740.1	61,544.6 66,336.7	13,088.3 14,008.4	113,788.4 124,713.9	87,850.4 95,432.1
-	less than 20	\$'000	1988 1989	731,539.6 805,177.7	8,278.8 8,786.4	2,636.6 2,476.2	17,746.1 19,437.0	14,521.2 14,932.8
-	20-49	\$'000	1988 1989	372,967.3 430,123.4	3,547.6 4,222.7	1,143.5 1,164.1	7,999.0 9,706.0	6,068.6 6,845.6
-	50-99	\$'000	1988 1989	307,775.0 336,389.1	3,118.1 3,525.8	983.6 1,146.1	5,756.2 6,463.2	4,924.6 4,929.1

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
35,600	43,400	34,300	33,800	38,900	37,000	..	..	1987	\$	47
36,000	46,900	37,000	35,100	41,200	39,100	..	..	1988		
										48
49.0	54.2	49.7	47.2	58.0	50.7	..	..	1988	%	
54.4	62.1	56.7	53.4	64.0	57.3	..	..	1989		
49.0	54.6	55.3	64.0	64.9	55.0	..	..	1988	%	
59.6	64.5	65.8	71.2	71.8	62.2	..	..	1989		
21.7	28.3	22.6	24.3	30.1	24.7	..	..	1988	%	
19.9	29.3	21.9	24.6	29.4	25.7	..	..	1989		
14.6	20.1	31.1	45.3	40.4	32.4	..	..	1988	%	
15.6	21.7	32.1	44.1	41.6	34.0	..	..	1989		
13.1	35.6	39.5	27.7	7.8	6.9	..	..	1988	%	
14.7	43.8	43.9	31.0	8.6	7.4	..	..	1989		
55.3	63.2	66.1	70.9	63.9	63.0	..	..	1988	%	49
54.8	64.6	67.4	71.8	64.6	65.2	..	..	1989		
44.1	50.4	55.8	57.5	47.2	49.7	..	..	1988	%	50
46.9	49.4	55.4	61.1	48.3	50.2	..	..	1989		
565	930	122	100	218	279	..	..	1988	'000	51
572	817	113	101	238	287	..	..	1989		
23.4	27.8	32.1	27.9	25.7	24.4	..	..	1988	%	52
22.8	24.0	29.5	28.2	27.5	24.1	..	..	1989		
19	21	22	24	20	23	..	..	1987	%	53
20	20	23	23	22	23	..	..	1988		
										54
2,490.9	4,144.4	384.6	298.2	916.9	1,063.7	9.9	19.2	1988	'000	
2,538.4	4,255.6	388.2	299.6	956.6	1,113.6	10.6	19.9	1989		
554.8	785.8	71.5	77.9	211.6	290.1	2.4	4.3	1988	'000	
620.7	846.7	74.0	76.0	231.0	292.3	2.7	4.3	1989		
270.9	391.8	35.5	31.6	85.2	110.9	1.3	1.9	1988	'000	
307.7	403.9	35.3	34.2	86.4	125.2	1.4	1.6	1989		
210.1	313.4	25.5	18.0	54.1	80.8	0.6	0.8	1988	'000	
201.3	329.6	26.5	21.8	58.9	77.7	0.8	0.9	1989		
										55
1,123,515.4	1,978,985.2	159,376.5	122,446.7	421,394.1	492,166.8	5,469.7	11,532.5	1988	\$'000	
1,186,802.8	2,131,645.2	170,571.9	126,142.9	455,593.6	539,519.0	6,017.1	12,956.4	1989		
184,834.1	284,548.1	20,637.0	23,510.2	73,053.5	99,074.2	899.5	1,800.4	1988	\$'000	
205,484.6	316,391.7	22,489.6	22,869.3	83,986.7	105,195.2	1,099.7	2,028.3	1989		
100,940.9	155,800.0	11,101.2	10,528.4	33,199.9	41,204.6	639.0	794.6	1988	\$'000	
117,266.5	179,387.3	12,363.8	11,564.0	34,843.7	51,289.3	642.4	828.1	1989		
84,658.0	135,418.6	9,045.5	6,744.7	23,872.1	32,551.4	279.5	422.8	1988	\$'000	
85,916.1	155,392.9	9,893.0	7,739.4	25,318.9	35,215.3	395.1	454.2	1989		

Key labour and income facts

Notes and definitions

No.	No.
1 Persons aged 15 and over who are employed or unemployed.	30 Data are for agreements involving bargaining units of 500 or more employees. Canada figures include workers covered by federal labour legislation plus agreements involving workers in more than one province.
2 Labour force as a proportion of the population aged 15 and over.	33 Labour income comprises gross wages and salaries (including directors' fees, bonuses, commissions, gratuities, taxable allowances and retroactive pay) and supplementary labour income (payments made by employers for the benefit of employees, including contributions to health and welfare schemes, pension plans, workers' compensation and unemployment insurance).
4 Persons who usually work less than 30 hours per week.	34 Labour income per employee is calculated using LFS estimates of paid workers excluding those absent without pay.
7 Unemployed as a proportion of the labour force.	44 For an explanation of the methodology underlying the low income cut-off, see <i>Income Distributions by Size in Canada</i> (13-207).
8 This rate, and rates shown as Indicators 9 and 10, are described in <i>The Labour Force</i> (71-001), February 1987.	54-55 The statistics are derived through the combination of data from the monthly Survey of Employment, Payrolls and Hours (SEPH) and the form PD7, which accompanies the remittance to Revenue Canada of employee tax instalments and employer/employee contributions to unemployment insurance and CPP/QPP.
9 The full-time labour force includes persons working full-time, those working part-time involuntarily and unemployed persons seeking full-time work. The part-time labour force includes persons working part-time voluntarily and unemployed persons seeking part-time work. On the margins of the labour force includes persons not looking for work because they believe none is available or because they are waiting for recall or for replies from employers.	
10 The rate shows hours lost through unemployment (unemployed multiplied by average actual weekly hours) and through underemployment (that is, short-time work schedules and involuntary part-time employment) as a proportion of hours worked plus hours lost.	

In the works

Here are some of the topics to be featured in upcoming issues of Perspectives on Labour and Income:

■ **Labour income**

Have the earnings of Canadian workers been able to keep up with inflation since the '70s? This study looks at trends in labour income between 1978 and 1988.

■ **Family incomes and government transfer payments**

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■ **1990: The mid-year review**

A comprehensive look at the labour market during the first six months of the year.

■ **Nursing in Canada**

Registered nurses now form the largest professional occupation in Canada. This study examines the labour market characteristics of this profession and offers insights on why the demand for nurses outweighs the supply.

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Does a Canadian family spend its money differently from its American counterpart? A look at the differences by family size and type, lone parents, income levels and homeownership.

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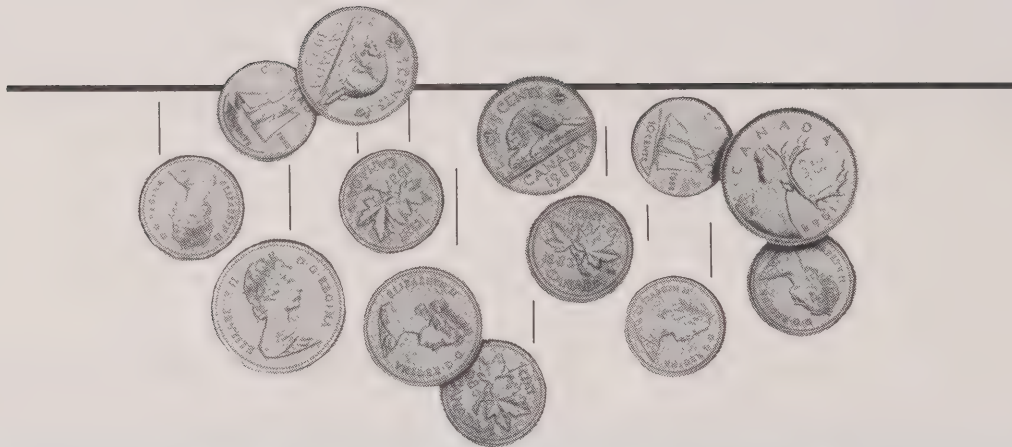
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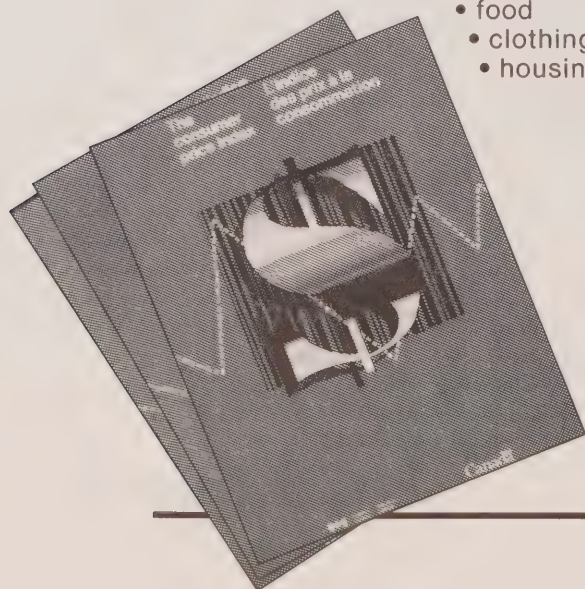
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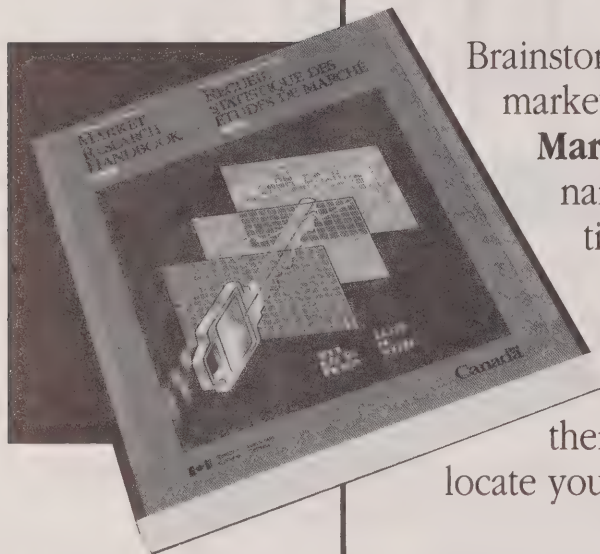


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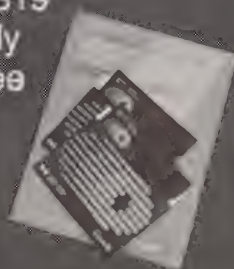
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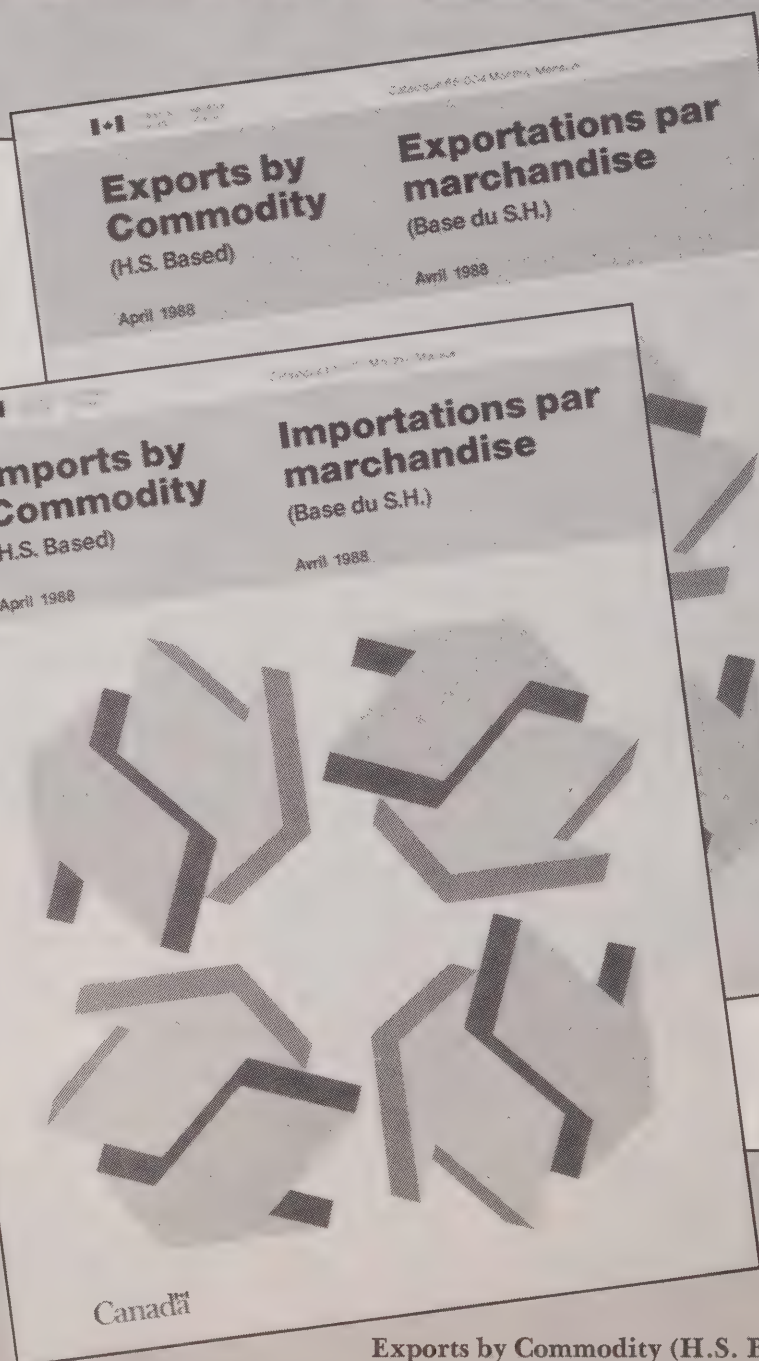
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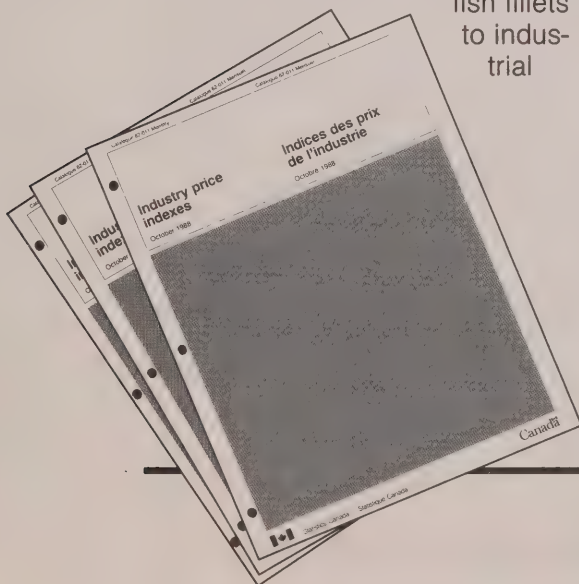
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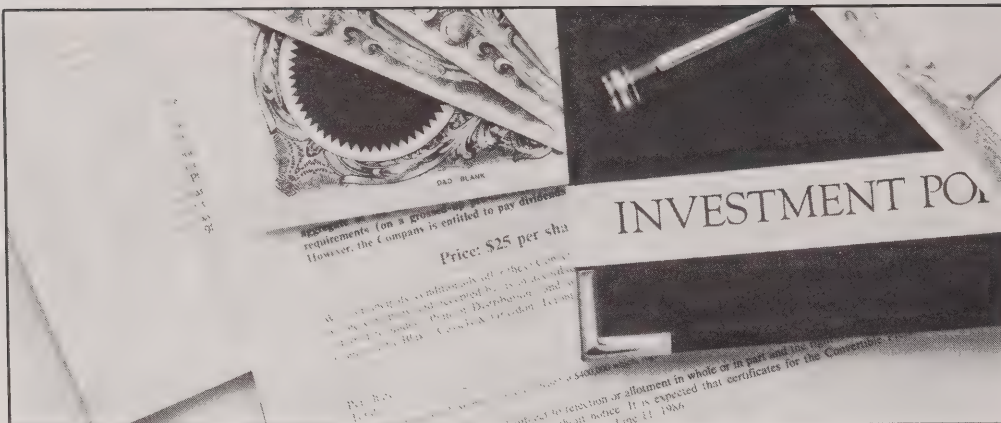
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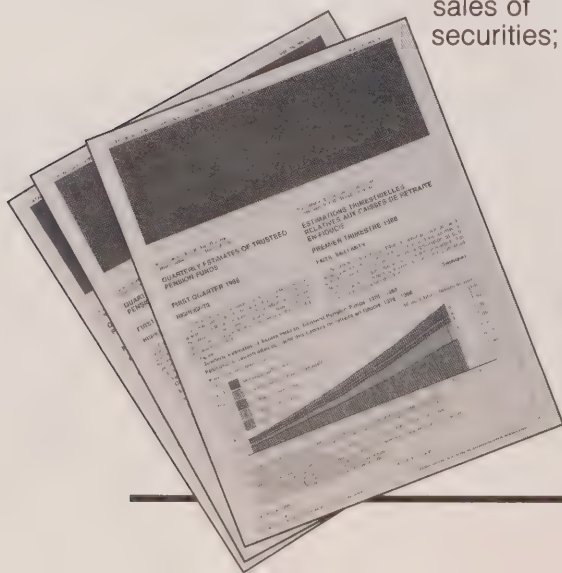
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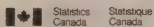
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
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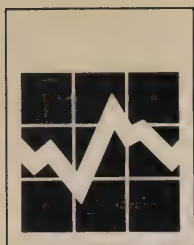
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PERSPECTIVES

ON LABOUR AND INCOME

Autumn 1990

Vol. 2, No. 3

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SPECIAL INSERT

The labour market: Mid-year report

Henry Pold

A comprehensive review of the labour market during the first six months of the year.

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Does a Canadian household spend its money differently than its American counterpart? This article examines the breakdowns in personal consumption, future security and income taxes by family type in the two countries.

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In Canada, there are both similarities and differences in the way urban and rural households spend their income and these patterns have tended to persist over time.

30 Under the influence

Dave Gower

Alcohol and drug abuse is one of the most important social issues in Canada today. Using results from the National Alcohol and Drug Survey, this article profiles the extent of alcohol and illegal drug use of Canadians by level of education, income and occupation.

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Henry Pold and Fred Wong

Have the earnings of Canadian workers been able to keep up with inflation since the 1970s? This study explains the components of labour income and analyzes the trends between 1977 and 1988.

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On the Cover:

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50 Government transfer payments and family income

Abdul Rashid

From family allowance cheques and child tax credits to old age security pensions and guaranteed income supplements, most Canadians benefit from government transfer payments. Using Census data from 1971 to 1986, this article reviews changes in government transfer payments.

61 Shifting patterns of unemployment distribution since the 1960s

Dave Gower

Are areas of high unemployment worse off in good times than in bad times? This study compares unemployment rates of the most and least prosperous areas during the various economic cycles over the past 25 years.

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ON LABOUR AND INCOME

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Forum

From the editor

■ In this issue of *Perspectives*, we publish an article about people who are heavy users of recreational mood-altering drugs. "Under the influence" analyzes the results of the National Alcohol and Drug Survey (NADS) and examines the basic socio-economic characteristics of Canadians who drink "too much" and use illegal drugs like marijuana and cocaine. The NADS methodology prevents author Dave Gower from making direct links between substance use, job performance and other work indicators, but the article nonetheless provides a broad profile of the kinds of industries and occupations in which abusers work, as well as their education and income levels.

The NADS has produced much valuable information on a delicate topic, but the indirectness of its measures of work force characteristics is frustrating. Such gaps in the data explain in part why statistical agencies are frequently chastised for not producing data that illuminate issues of contemporary urgency. But it should not be presumed that this is due to lack of interest, awareness or willingness. No matter how sophisticated a country's statistical system may be, it is still difficult to collect information about activities that relate to a socially or personally sensitive topic. The difficulties are even greater if the survey questions respondents about behaviour that is inhibited by social constraints or prohibited by law.

In some cases, we have examples of the extent of underreporting. Even in a value-neutral expenditure survey such as the Survey of Family Expenditures (FAMEX), the amount of money people claim they spend on alcohol and tobacco never matches the sales figures.

Knowing the size and extent of possible error is the first step toward correction; and for analysts, it is also easier to compensate for distortions when the error is known. However, when there is no point of reference and the magnitude of the error is unknown, underreporting presents a dilemma to the statistician, who may under or overestimate its effect on the data.

Underreporting is not necessarily deliberate; it can easily be the result of faulty recall, problem denial and so on. Some academic and clinical researchers are already investigating the psychology of underreporting, so we may eventually understand why people are not entirely factual in describing their behaviour. But this does not imply that solutions to underreporting will also be found.

If this remains the case, we have to wonder if the inability to acquire accurate data on substance abusers through surveys could lead to infringements upon the privacy of all members of society. A substance abuser can become the client of any number of government services – criminal justice, health care, workers' compensation – and program administrators may be tempted to build statistical profiles of abusers by linking data from administrative files. Such an Orwellian solution is improbable,

however, because it is not clear that any government is prepared to intrude so deeply into the private affairs of its citizens.

Methodological successes of the past give us some reason to be confident about the future. The history of survey research is filled with cases where data previously thought to be unobtainable are now routinely collected.

And of course, the problem may to a degree solve itself: the more frequently sensitive topics like substance abuse become the subject of polite conversation, the more likely that people will reply honestly to surveys asking about their behaviour. In time, therefore, the gaps in the data may be filled by the respondents themselves.

Ian Macredie
Editor-in-Chief

□

Letters

■ Just a short note to congratulate you and your colleagues at Statistics Canada for producing this new periodical. Well-written and innovative, the publication offers the wider Canadian policy community a glimpse into the rich variety of analysis and data available from Statistics Canada. In addition to the informative articles, I also found the regular sections on "Key Labour and Income Facts" and "Sources" very useful.

This new journal will be welcomed by all whose professional responsibilities require them to keep abreast of a wide range of labour market and social policy issues. In an era of increasing "information overload", it is essential that researchers doing policy-relevant work find creative ways to disseminate their findings to a larger audience of (potentially) interested readers who lack the time to wade through weighty

and often impenetrable research studies. This publication admirably fits the bill.

Sincerely,

Jock A. Finlayson
Vice President, Policy and Research
Business Council on National Issues

□

■ "Wives as Primary Breadwinners" successfully challenges several working-wife stereotypes. Unfortunately, embedded in the analysis itself is another stereotype that we, as a society, seem reluctant to jettison. Whether a woman earns more or less than her husband, her income is still viewed almost exclusively in terms of its contribution to the family unit.

I am concerned that such family-oriented income analysis continues to portray women as part of a group and therefore able to depend on that group's resources in time of calamity. In hard times, working women often face higher unemployment than men, on the grounds that men have families to support and women do not. Such utilitarianism may be acceptable if a woman can indeed rely on another working adult, but increasingly this is not the case.

The family-oriented approach also seems to exclude single women. At a time when working women are so widely and earnestly discussed, I cannot recall a news article or documentary report about working women who have neither husbands nor children. This odd silence neglects the principal life experience of a significant proportion of the population.

(Ironically, these are the only women who can be compared to men under a conservative family-oriented model because both groups are in exactly the same position: they are solely responsible for supporting themselves and/or dependants.)

I would take my hat off to *Perspectives* if it published a statistical portrait of single working women. I know many childless, husbandless 30 to 40-year-old women who deserve to have their experience in the work force chronicled.

Yours sincerely,

Mary Copping
Ottawa



We welcome your views on articles and other items that have appeared in *Perspectives on Labour and Income*. Additional insights on the data are also welcome, but to be considered for publication, communications should be factual and analytical. We encourage readers to inform us about their current research projects, new publications, data sources and upcoming events relating to labour and income.

Statistics Canada reserves the right to select and edit items for publication. Correspondence, in either official language, should be addressed to: Susan Crompton, Forum and Sources Editor, *Perspectives on Labour and Income*, 5-A Jean-Talon Building, Statistics Canada, Ottawa, K1A 0T6, or call (613) 951-0178.

Highlights

Here are some key findings from the articles in this issue of Perspectives on Labour and Income.

Where the money goes: Spending patterns in Canada and the U.S.

■ In 1986, the average Canadian household spent 72 cents of every dollar on personal consumption, 19 cents on federal and provincial income tax and 6 cents on life insurance premiums and pension plans. Meanwhile, an American household that same year spent 80 cents of every dollar on personal consumption, 9 cents on income taxes, 8 cents on life insurance premiums and pension plans.

■ Shelter, transportation, food and clothing accounted for 50% of total expenditures for Canadians while they made up 58% of Americans' expenditures.

■ American households spent more of their food money outside the home (42%) in contrast to Canadians who spent 24% of their food budget outside the home.

■ The higher the household income, the lower the proportion of income spent on food. In 1986, the lowest income group in Canada spent 22 cents of every dollar on food while the highest income group spent just 11 cents.

■ Americans spent relatively more on shelter due to higher mortgage interest payments and the higher cost of utilities.

Consumer spending in urban and rural Canada

■ Rural households spent more on food (15.4%) than urban households (14.1%) in 1986. A larger family size and generally higher prices in rural Canada probably contributed to this situation.

■ Expenditures on shelter accounted for a larger share of an average urban household's budget in 1986 (16.5%) than for a rural household's (14.2%). One-third of shelter expenses for urban households was spent on rent. Only 11% of shelter costs was spent on rent by rural households.

■ Between 1978 and 1986, there was minimal shifting in expenditure patterns of both urban and rural families.

■ During the recession of 1982, high mortgage interest rates increased shelter costs in both urban and rural households. There was also a drop in the share of transportation costs as high interest rates and the recession discouraged the purchase of automobiles and other motor vehicles.

■ In 1978, income taxes were the average urban household's third highest expenditure after food and shelter. By 1986, income taxes had become the number one expense.

Under the influence

■ Young men most commonly admit to heavy alcohol consumption and use of illegal drugs. In March 1989, 15% of men aged 15-24 had consumed 14 drinks in the week prior to the survey or regularly had five or more drinks on one occasion. About 19% of these men admitted using illegal drugs in the previous 12 months.

■ Nearly 400,000 Canadians can be described as both heavy drinkers and drug users.

■ The correlation between substance abuse and a low level of education is not strong. In fact, heavy drinking and drug usage are highest among those who have some post-secondary education.

■ The higher the family income, the more likely alcohol is used. At all education levels, not only is alcohol use more prevalent in families with an income of \$40,000 or more, but also there are more heavy drinkers.

■ Workers in white-collar occupations tend to have lower levels of heavy substance abuse than those in blue-collar jobs. The lowest rates are found among professionals and the highest in construction and transportation and materials handling.

The price of labour

■ In 1988, paid workers in Canada received an average of \$29,969 in labour income. After adjusting for inflation, average income was actually 1.6% lower than 1977.

■ Between 1977 and 1988, after adjusting for inflation, wages and salaries dropped by

3.3% or about \$1,000. On the other hand, supplementary labour income – employer contributions to unemployment insurance and pension plans as well as medical and dental plans – increased by 17% between 1977 and 1988.

■ Average labour income increased in the goods-producing sector but declined in the services-producing sector between 1977 and 1988. The increase in the goods-producing sector was attributable to substantial growth of the supplementary labour income component (\$881), which cancelled the loss in wages and salaries (-\$260). On the other hand, the large decline in wages and salaries (-\$963) in the service sector was not balanced by the modest gain in supplementary labour income (\$281).

■ Average labour income fell significantly between 1979 and 1988 in only two provinces – Newfoundland (-5.4%) and British Columbia (-4.0%).

Government transfer payments and family income

■ In 1985, eight out of ten families received some form of monetary assistance from government. In the lowest income group, nine out of ten families received assistance. About two-thirds of total income for this group came from government transfer payments. The composition of this group has changed from the elderly in 1970 to more single-parent and young families in 1985.

■ Government family payments formed a greater percentage of family income in 1985 than in 1970. Compared with five cents of every dollar of family income in 1970, nearly ten cents came from the government transfer payments in 1985.

■ Without government transfer payments almost a quarter of all families would fall below Statistics Canada's low income cut-offs. In 1985, over 700,000 families rose above low income cut-offs because of government transfer payments. Over half of these families (400,000) were elderly.

Shifting patterns of unemployment distribution since the 1960s

■ In the past 25 years, unemployment rates in less prosperous areas of the country did not fluctuate, in relative terms, as widely as they did in areas of low unemployment.

■ The unemployment rate associated with a given ratio of inequality has risen. The inequality ratio in both 1973 and 1980 was about 2.5, but the unemployment rate was two percentage points higher in 1980 (7.5% compared with 5.5%). □

Where the money goes: Spending patterns in Canada and the U.S.

Raj K. Chawla

As Canada and the United States enter an era of free trade, the removal of various customs and excise duties will affect the prices of goods in both countries. This in turn will influence "out-of-pocket" expenditures by households.¹ This paper examines how households in the two countries spent their respective "spending dollar" in the pre-free-trade era.

Do Canadians spend relatively more than Americans on basic essentials such as food, shelter and clothing? What proportion of their respective "spending dollar" is allocated to personal income tax and to future security? How do expenditure patterns vary by family characteristics such as income, life cycle,² and type of family? Who controls most of the spending? How does the concentration of total consumer spending differ from the concentration of total income?

Some of the differences in expenditure patterns in the two countries arise from the differences in prices of goods and services. The sheer size of the U.S. economy (its gross national product is about ten times that of Canada) implies more competition in consumer markets and more variety in goods and services. This usually results in lower prices for consumers. Thus, an "equivalent" basket of goods and services may cost rela-

tively less in the United States than in Canada. Put another way, the purchasing power of the U.S. dollar may be higher than the Canadian dollar.

Besides its smaller market, several other factors affect the prices of goods and services in Canada. These include higher federal customs and excise taxes, sales taxes, transportation costs, interest rates, exchange rates between the Canadian and U.S. dollar, and climatic conditions.

Factors such as levels of incomes, wealth, and the demographic mix of households can also contribute to the differences in expenditure patterns. For instance, American households, on average, are richer in terms of both income and wealth (Chawla, 1990).³ Though the two countries are similar in the demographic mix of their spending units,⁴ some differences appear in expenditure patterns by demographic characteristics. Data for this article are drawn from the 1986 Canadian Family Expenditure Survey and the integrated annual estimates of expenditures published by the U.S. Department of Labor (*Consumer Expenditure Survey: Integrated Survey Data, 1984-86*).

Average expenditure per household⁵

How do households in each country allocate their respective "spending dollar"? In 1986, Canadians spent 72 cents of every dollar on

Raj K. Chawla is with the Labour and Household Surveys Analysis Division. He can be reached at (613) 951-6901.

Sources of data

Data for Canadian spending units were taken from the 1986 Family Expenditure Survey (FAMEX), conducted in February and March 1987. This national survey collected data on the spending of households covering the non-institutional population. It collected detailed data on all expenditures in the 1986 calendar year. Data published from this survey and other related conceptual details can be found in *Family Expenditure in Canada, 1986*. The 1986 Canadian data on expenditures on food collected on the basis of the "diary" survey are published separately in *Family Food Expenditure in Canada, 1986*.

Data on expenditures of American consumer units were taken from the U.S. Department of Labor *Consumer Expenditure Survey: Integrated Survey Data, 1984-86*. In the U.S., the Consumer Expenditure Survey (CES) consists of two separate components: (a) a quarterly interview panel survey which collects most of the data on household expenditures; and (b) a diary or recordkeeping survey which collects detailed data on food and other selected items (such as housekeeping supplies, personal care products and services). Each of these components has its own questionnaire and independent sample.

For integration purposes, expenditure items were divided into three categories: (1) those unique to the diary survey, (2) those unique to the interview survey (including items requiring partial or complete reimbursements), and (3) those available in both surveys (definitional considerations were not a factor). A statistical measure, known as the mean square error (MSE), was used to determine the better source data for items in category (3). A more detailed account of integration and survey methods is given on pages 148-152 of the source document used for the United States.

The overall response rate for the Canadian Family Expenditure Survey was 76.6% compared with 85.1% for the American Consumer Expenditure Survey.

Concept of expenditure

The conceptual framework and the global classification of expenditure items used in the Canadian FAMEX and the American CES are fairly comparable. In principle, *total family expenditure*

personal consumption, 19 cents on personal income taxes (federal and provincial), 6 cents on future security (such as premiums on life and term insurance, contributions to public and private pension plans) and the remaining 3 cents on gifts and cash contribu-

consists of expenditure on consumption items (referred to as personal consumption expenditure) and expenditure on non-consumption items, namely, personal income tax, security, gifts and contributions. Total personal consumption comprises expenditures on food, shelter, clothing, household operations, furnishings and equipment, transportation, health care, personal care, education, recreation, reading, tobacco and alcoholic beverages, and other miscellaneous items.

Expenditures on goods and services incurred by consumer units are transaction costs, including customs and excise taxes, provincial and state and local taxes. Expenditures considered here were "out-of-pocket" expenditures as well as those for which payments were still to be made (for example, for items purchased on credit). All expenditures were net of trade-in amounts. Expenditures on items purchased for business purposes were excluded.

Per capita expenditure

Per capita expenditure of consumer units in a specified category is obtained by dividing the average expenditure by the average number of persons (irrespective of their age) in that category.

Concept of total income

Total income of a consumer unit consists of earnings, government transfer payments, investment income, pensions, alimony, and so on. Data on incomes and personal taxes of Canadian spending units pertained to the 1986 calendar year whereas those for Americans referred to the 12-month period preceding the interview time, which may have been different from the 1986 calendar year.

Besides this difference in the accounting period, the concept of total income used in the two surveys was not that comparable due to certain collection procedures (details can be found in the respective source documents). Because of these problems, we could not compare average incomes of consumer units in the two countries, or for that matter, compare any other ratio involving income data (for instance, savings rate or effective tax rate, and so on).

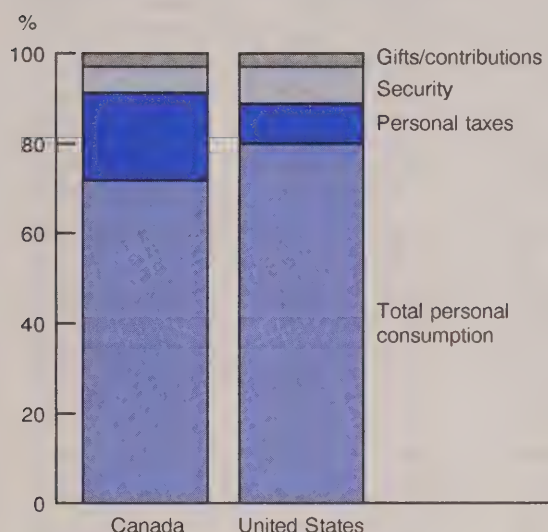
Income quintile groups

Spending units with complete income details are ranked in ascending order of total income before-tax, and then are partitioned into five equal groups or quintiles.

Americans, on the other hand, spent 80 cents on personal consumption, 9 cents on personal taxes (federal, state and local),⁶ 8 cents on future security and 3 cents on gifts and contributions.

Distribution of total expenditure, 1986

Compared with Canadian households, American households pay relatively less personal taxes.



Sources: Canada: Family Expenditure Survey, 1986
U.S.: Consumer Expenditure Survey, 1984-86

After personal income taxes and premiums/contributions for security, both Canadians and Americans spent most of their dollar on shelter. In both countries, the next two expenditure categories were food and transportation; Canadians spent more on food than on transportation while Americans did the reverse. The money spent on the four basic necessities (food, shelter, clothing and transportation) accounted for 50% of the total expenditure for Canadians compared with 58% for Americans. Including taxes and the cost of security, households in both countries spent about 75 cents of every dollar on these six items alone. In other words, only 25 cents of each dollar was available for goods and services such as health and personal care, education, reading, recreation and household operations (Table 1).

Americans spend relatively more than Canadians on shelter, private transportation, and health care. The greater expenditure on shelter by Americans can be attributed to two factors: higher mortgage interest payments on owned dwellings, and higher expenditures on utilities, fuels and public services (Table 2). The higher mortgage interest payments on owned dwellings may be a result of an economic incentive built into U.S. income tax provisions making such interest costs tax deductible. Such an incentive to save income tax may encourage Americans to undertake a higher mortgage on a high-priced home (due to its larger size and/or its location in a densely populated area). This in turn may result in relatively higher average expenditure on utilities, fuels and other public services.

The higher expenditure by Americans on private transportation, however, is largely attributable to a difference in survey concepts. The U.S. data include interest charges on cars and other vehicles purchased with loans, whereas Canadian data include such charges in the "miscellaneous" expenditure category.

One reason why Canadians pay higher taxes than Americans is that most of the cost of Canada's social welfare programs, including health services, is financed by government general revenue, which relies primarily on personal direct income taxes. In the United States, on the other hand, such programs are financed not only by governments but also by private insurance schemes. Americans pay premiums into private insurance plans for coverage for some health services and pay the full cost for services not covered by such plans. Thus they incur greater expenses on health care than Canadians, who are covered under universal health insurance plans.

Table 1

Distribution of average expenditure of spending units by income quintile groups,* 1986

Item	Lowest 20%		Middle 20%		Highest 20%		Total	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
%								
Food:	21.7	16.2	15.0	14.5	11.3	11.1	13.9	13.2
At home	18.8	10.7	11.6	8.7	7.8	5.6	10.5	7.6
Away from home	2.9	5.5	3.4	5.8	3.5	5.5	3.4	5.6
Shelter	31.2	28.3	18.1	22.3	13.1	18.6	17.0	21.5
Household operations	3.7	2.7	2.9	2.7	2.8	2.4	3.0	2.6
Household furnishings and equipment	3.4	3.1	3.6	3.7	3.4	4.3	3.5	3.8
Clothing	5.5	5.6	5.9	5.0	6.5	5.1	6.1	5.1
Transportation:	9.4	17.4	13.5	18.9	12.4	17.7	12.9	18.5
Private	7.7	16.3	12.4	18.0	11.3	16.7	11.7	17.6
Public	1.7	1.1	1.1	0.9	1.2	1.0	1.2	0.9
Health care	2.4	6.6	2.0	5.5	1.4	3.0	1.8	4.3
Other expenditures	14.9	13.0	14.5	11.3	12.8	10.7	13.8	11.2
Total personal consumption	92.2	93.0	75.5	83.8	63.8	72.9	72.0	80.3
Personal taxes	2.8	1.2	15.8	6.2	25.2	12.5	18.8	8.7
Security	0.6	2.8	5.4	7.0	7.9	11.3	6.1	8.1
Gifts and contributions	4.3	3.0	3.4	3.0	3.1	3.3	3.1	2.9
Total expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average expenditure (\$)	11,400	11,600	32,900	22,500	69,600	52,900	36,100	26,200
Average number of persons	1.6	1.9	2.8	2.6	3.6	3.2	2.7	2.6
Average age of reference person	57	49	42	44	45	45	47	47

Sources: Canada: Family Expenditure Survey; U.S.: Consumer Expenditure Survey

* For the U.S. data, income quintiles are based on the universe of "complete income reporters" only.

Although the relative expenditures on total food were similar, the proportions spent on food consumed "at home" and "away from home" differed considerably. Americans spent 42% of their total food expenditure on food consumed outside the home compared with only 24% for Canadians.⁷

Expenditure patterns of selected groups

Consumer units in the highest and the lowest income quintiles⁸

The total income of a spending unit is the key predictor of its standard of living and its

expenditure pattern. As incomes rise, households not only tend to spend more, but also to expand their choices about the quality and quantity of goods and services they consume.

For both Canadian and U.S. households, the proportion of total expenditure on food declined as the level of income increased. For example, Canadians in the lowest income quintile spent 22 cents of every dollar on food compared with 11 cents for those in the highest income quintile; the corresponding proportions in the United States were 16 cents and 11 cents. Irrespective of income level, Americans

Table 2
Distribution of expenditure on shelter of spending units by income quintile groups,*
1986

Item	Lowest 20%		Middle 20%		Highest 20%		Total	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
%								
Shelter/total expenditure	31.2	28.3	18.1	22.3	13.1	18.6	17.0	21.5
Expenditure on shelter	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Owned dwellings:	16.4	24.8	37.3	30.3	54.2	57.0	41.0	41.0
Property taxes	6.5	6.1	9.3	6.0	14.2	8.5	10.7	7.4
Mortgage interest	2.3	11.6	16.1	17.2	24.2	39.1	17.5	25.4
Maintenance, repairs, insurance, other expenses	7.5	7.0	11.9	7.2	15.8	9.4	12.7	8.1
Utilities:	25.7	35.0	25.4	30.5	24.4	23.8	25.1	29.2
Natural gas	2.7	5.2	3.4	4.3	4.3	3.6	3.7	4.4
Electricity	9.7	14.1	9.4	12.8	9.1	9.8	9.4	12.0
Fuel oil and other fuels	4.5	2.8	3.5	1.9	2.8	1.2	3.2	1.9
Telephone	7.6	10.2	7.7	9.0	6.7	6.7	7.3	8.4
Water and other public services	1.2	2.7	1.4	2.5	1.6	2.4	1.5	2.6
Rented dwellings	56.5	34.6	33.0	34.1	11.1	8.1	28.1	22.4
Other lodging	1.4	5.5	4.4	5.1	10.3	11.1	5.8	7.3
Proportion of homeowners	34	41	59	56	87	87	60	62

Sources: Canada: Family Expenditure Survey; U.S.: Consumer Expenditure Survey

* For the U.S. data, income quintiles are based on the universe of "complete income reporters" only.

spent relatively less on food than Canadians (Table 1), the most noticeable difference being for households in the lowest quintile.⁹

Households in the lowest income quintile spent relatively more on shelter in Canada than in the United States, whereas the reverse prevailed for the middle and the highest income quintiles. Americans in the highest income quintile spent 19% of their total expenditures on shelter compared with 13% for their Canadian counterparts. The relative expenditures on household operations and household furnishings and equipment, however, did not vary significantly between the two countries.

For overall average expenditures, the ratio of the highest to the lowest income quintile was 6.1 in Canada compared with 4.6 in the United States. But these ratios dropped to 4.2 and 3.6, respectively, for average personal consumption expenditures (that is, total expenditure *less* personal taxes, costs of future security, gifts and contributions). Since households in the highest income quintile spent relatively more on taxes, security and gifts (Table 5), excluding these three items reduces the gap between the average expenditures of consumer units in the extreme income quintiles. The effect on the gap is more

pronounced in Canada than in the United States.

Another way to look at the gap in average expenditures between the highest and the lowest income quintiles is to compare their per capita total expenditures and their per capita personal consumption expenditures. On the basis of per capita total expenditure, for instance, the highest quintile in both Canada and the United States spent 2.7 times more than its respective lowest quintile. The ratio dropped to 1.9 for Canada and 2.1 for the United States when per capita personal consumption expenditures were compared. This indicates that regardless of the concept of expenditure used, the gap in average expenditures between households in the extreme income quintiles was almost the same in both countries.

The young and the elderly

In both countries, elderly households (that is, those with reference persons 65 years old and over) spent more than one-fifth of their respective spending dollar on shelter (Table 3). The major difference in expenditures of the elderly appeared in health care. In relative terms, the elderly in the United States spent 4.4 times more on health care.

The elderly in Canada spent relatively less on private transportation than their U.S. counterparts. Besides conceptual differences underlying the data on this item, lower expenditure on private transportation among the Canadian elderly may be attributable to the lower incidence of car-ownership.¹⁰ This in turn may be due to several factors. First, cars are generally more expensive to purchase and operate in Canada. Second, elderly Canadians may choose not to drive because of severe winter conditions. A third factor may be differences in life styles – the American elderly spent over one-third of their total food expenditure on food consumed outside the home

compared with less than one-sixth for Canadians.

Of every dollar spent by young households (that is, those with reference persons under 25), 40 cents were spent on food, shelter and clothing in Canada compared with 43 cents in the United States (Table 3). Adding the costs of private transportation to these three basic necessities further widens the gap between expenses to 53 cents of each dollar on these four items for Canadians compared with 65 cents for Americans. As one would expect, in both countries the young spent relatively more on future security (in terms of premiums for life or term insurance, contributions to public and private pension plans, etc.); the elderly spent relatively more on gifts and other cash contributions.

Compared to the per capita average expenditures of the young households, the elderly spent 13% less in Canada but 7% more in the United States. The expenditure items contributing to these differences in expenses incurred by the young and the elderly were recreation, education, tobacco and alcoholic beverages in Canada, but primarily health care in the United States.

Lone-parents and married couples

In both countries, lone-parent families spent relatively more than husband-wife families on basic necessities (Table 4) – about half of their spending dollar compared with 36-38 cents for the latter group. In Canada, lone-parent families spent 83 cents of every dollar on personal consumption compared with 72 cents for husband-wife families with children under 18. The latter group paid more for personal taxes, future security, gifts and other contributions. In the United States, however, the gap in relative shares of personal expenditures for these two groups of families was only six cents per dollar.

Table 3
Distribution of average expenditure of spending units by age of reference person, 1986

Item	Under 25		25-34		35-54		55-64		65 and over	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
%										
Food:	13.6	14.2	13.3	12.7	13.6	13.1	14.3	12.6	16.4	14.3
At home	9.0	6.7	9.5	7.2	10.2	7.5	11.0	7.7	13.8	9.4
Away from home	4.6	7.5	3.8	5.6	3.4	5.7	3.3	4.9	2.6	4.9
Shelter	19.2	22.9	18.6	23.2	15.6	20.7	15.1	19.2	21.6	23.2
Household operations	2.5	2.0	3.5	2.8	2.9	2.3	2.4	2.3	2.9	3.6
Household furnishings and equipment	3.6	3.3	3.9	3.9	3.5	3.9	3.0	3.6	3.4	3.7
Clothing	6.9	5.5	5.9	5.4	6.5	5.4	5.6	4.8	5.1	3.8
Transportation:	13.7	22.0	12.4	19.4	12.5	18.6	14.1	18.1	13.8	15.7
Private	12.1	21.0	11.4	18.5	11.4	17.6	12.9	17.2	12.5	14.6
Public	1.6	1.0	1.1	0.9	1.1	1.0	1.2	0.9	1.3	1.1
Health care	1.5	2.4	1.5	2.8	1.7	3.3	2.1	5.2	2.4	10.6
Other expenditures	18.0	15.0	14.0	11.1	13.9	11.4	13.0	10.6	12.1	9.7
Total personal consumption	78.9	87.4	73.2	81.4	70.2	78.8	69.8	76.4	77.7	84.7
Personal taxes	14.2	6.1	18.8	9.0	20.5	9.2	19.0	10.3	12.3	6.1
Security	4.6	5.6	5.9	8.3	6.7	9.2	7.7	9.6	2.0	3.7
Gifts and contributions	2.2	1.0	2.1	1.3	2.6	2.8	3.6	3.8	8.0	5.5
Total expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average expenditure (\$)	27,900	15,100	36,200	26,300	45,800	34,800	34,900	27,700	19,700	16,200
Average number of persons	2.1	1.8	2.8	2.8	3.4	3.2	2.4	2.4	1.7	1.8
Proportion of homeowners (%)	13	12	46	46	73	72	73	81	60	75

Sources: Canada: *Family Expenditure Survey*; U.S.: *Consumer Expenditure Survey*

This gap may indicate differences in tax credit schemes, income tax and income transfer provisions (cash transfers in Canada compared with cash and in-kind transfers such as food stamps, medicare and subsidized housing in the U.S.) available to lone-parent and husband-wife families in the two countries. In both countries, husband-wife families with children spent relatively more than any other group on future security (that is, term or life insurance, public and private pension plans, etc.).¹¹

For both overall and per capita averages, the expenditure gap between lone-parent and husband-wife families with children was narrower in Canada than in the United States. For instance, the ratio of per capita expenditure of lone-parent to husband-wife families with children was 77% in Canada but 68% in the United States. In each country, the overall average expenditure of lone-parent families was higher than that of unattached individuals but lower than that of husband-wife families with children (Table 4).

Table 4
Distribution of average expenditure of spending units by type of spending unit, 1986

Item	Unattached individuals		Husband-wife families with children less than 18		Lone parents with children less than 18		Families with two or more people*	
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.
%								
Food:	13.8	12.1	13.9	13.6	16.9	15.4	13.9	13.4
At home	9.4	5.8	11.0	8.3	13.5	10.3	10.6	8.0
Away from home	4.4	6.3	2.9	5.4	3.4	5.1	3.3	5.4
Shelter	23.3	25.1	16.9	21.3	23.6	27.4	16.1	20.8
Household operations	2.3	2.2	4.0	3.3	5.1	3.7	3.1	2.6
Household furnishings and equipment	3.1	3.2	4.0	4.3	3.5	2.8	3.6	3.9
Clothing	5.2	4.8	6.2	5.4	6.9	7.5	6.3	5.2
Transportation:	10.1	15.8	12.3	18.8	9.9	15.6	13.3	19.1
Private	8.4	14.5	11.5	18.1	8.2	14.7	12.2	18.2
Public	1.7	1.3	0.8	0.7	1.7	0.9	1.1	0.9
Health care	1.9	5.0	1.7	3.3	1.8	3.4	1.8	4.2
Other expenditures	14.1	12.1	13.3	11.3	15.1	11.5	13.8	11.0
Total consumption	73.8	80.2	72.3	81.4	82.8	87.4	71.8	80.3
Personal taxes	15.9	9.7	19.7	8.1	11.2	5.9	19.2	8.6
Security	4.5	6.5	6.3	8.7	3.9	5.8	6.3	8.5
Gifts and contributions	5.8	3.6	1.8	1.8	2.0	0.8	2.8	2.7
Total expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average expenditure (\$)	18,600	15,200	44,000	34,700	24,600	17,200	41,400	30,500
Average number of persons	1.0	1.0	4.0	4.0	2.9	2.9	3.2	3.2
Average age of reference person	53	49	36	36	36	35	45	46
Proportion of home-owners (%)	30	39	74	73	29	30	69	71

Sources: Canada: Family Expenditure Survey; U.S.: Consumer Expenditure Survey

* Includes all other families not shown separately in this table.

Who controls consumer spending?

In both Canada and the United States, the relative share of total expenditure, personal consumption expenditure, and expenditure on any item increased as the level of income increased. For example, consumer units in the highest income quintile controlled about two-fifths of the total expenditure in both countries. These shares dropped to 34% in Canada and 36% in the U.S. when non-

consumption expenditure (income taxes, security, gifts and contributions) was excluded from total expenditure.

For Canada, the gap in relative shares of total expenditure between the lowest and the highest quintile groups was 33 percentage points, and 26 percentage points with personal taxes, security and gifts excluded; the corresponding gaps for the United States were 31 and 26 percentage points. The gaps in relative shares of total income before taxes for these quintile

groups, however, amounted to 37 percentage points in Canada compared with 45 percentage points in the United States.

The data further demonstrate that, in both countries, total income was more concentrated than total or personal consumption expenditure, and that the difference in the degree of concentration of both income and expenditure was less pronounced in Canada than in the United States.

Canadian households in the highest income quintile paid 52% of the total personal income taxes, compared with 58% in the United States; 50% of the expenditures on future security, compared with 51%; and 37% of the total spending on household furnishings and equipment, compared with 44% by their American counterparts. For health care expenses, Canadian households in the lowest income quintile paid 8% of the total, while the corresponding U.S. households paid 13% (Table 5).

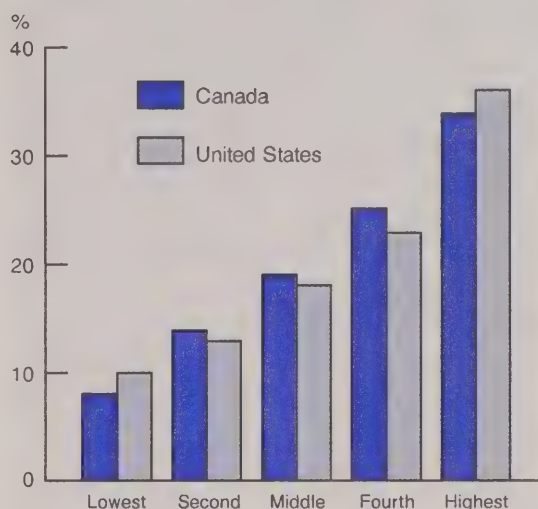
Compared with Canadians, American consumers in the lowest income quintile spent more on personal care, education, reading, tobacco and alcoholic beverages. In view of the very heterogeneous make-up of this group (comprising young and elderly unattached individuals, lone-parent families, and self-employed persons with low or negative incomes), no clear explanation can be provided for differences in selected expenditure items for consumers in the lowest income quintile.

Conclusion

The expenditure patterns of Canadian and American households are fairly comparable. Canadian households pay more in terms of personal income taxes but less "out-of-pocket" costs for future security than Americans. In addition to this major difference, Americans spend relatively more on food consumed away from home and on shelter.

Relative shares of total consumption expenditure by income quintiles, 1986

The concentration of total consumer spending is relatively greater in the U.S. than it is in Canada.



Sources: Canada: Family Expenditure Survey, 1986
U.S.: Consumer Expenditure Survey, 1984-86

Although the total consumer spending is concentrated among consumers in the highest income quintile, the degree of concentration is less pronounced in Canada. In both countries, total expenditure is less concentrated than total income. The lesser concentration in respect to total expenditure follows from all households having to maintain a certain essential level of subsistence, whether financed by a household's earned income or government transfers or by credit available. Once the basic subsistence level is reached, a household can spend its money on a variety of goods and services according to its tastes and preferences. □

Table 5
Relative shares of total expenditure by item for spending units by income quintile groups, 1986

Item	Canada					Total	U.S.*				
	Lowest 20%	Second 20%	Third 20%	Fourth 20%	Highest 20%		Lowest 20%	Second 20%	Third 20%	Fourth 20%	Highest 20%
	%										
Food:	10	15	20	24	31	100	11	14	18	24	33
At home	11	16	20	24	29	100	12	16	19	24	29
Away from home	5	12	18	25	40	100	9	11	17	24	39
Shelter	12	16	19	23	30	100	11	14	18	22	35
Household operations	8	13	18	25	36	100	9	13	17	24	37
Household furnishings and equipment	6	14	18	25	37	100	7	10	16	23	44
Clothing	6	12	17	24	41	100	9	12	16	24	39
Transportation:	5	13	19	26	37	100	8	11	17	25	39
Private	4	13	19	27	37	100	8	11	18	25	38
Public	9	15	17	21	38	100	11	10	16	20	43
Health care	8	16	20	26	30	100	13	18	21	21	27
Other expenditures	7	13	19	25	36	100	10	12	17	24	37
Total personal consumption	8	14	19	25	34	100	10	13	18	23	36
Personal taxes	1	6	15	26	52	100	1	4	12	25	58
Security	1	7	16	26	50	100	3	6	14	26	51
Gifts and contributions	9	13	20	20	38	100	9	9	17	20	45
Total expenditure	6	12	18	25	39	100	9	11	17	23	40
Total income before taxes	5	11	17	25	42	100	3	9	15	25	48

Sources: Canada: Family Expenditure Survey; U.S.: Consumer Expenditure Survey

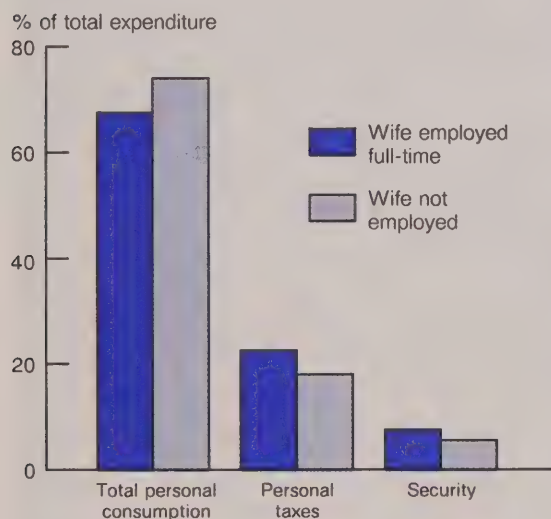
* For the U.S. data, income quintiles are based on the universe of "complete income reporters" only.

Postscript: Expenditures of Canadian families with wives employed full-time¹²

How does having a wife employed full-time (that is, working 30 hours or more a week for 49-52 weeks a year) influence a family's expenditure pattern? Since the wife's earnings add to a family's income, it is natural to assume that any additional income should influence the family's expenditure pattern. Some U.S. studies have looked into this issue and have concluded that "...the effect of the wife's working is to move the family into a higher income class where it will tend to exhibit the expenditure pattern of that income class."¹³

Relative expenditures by wife's employment status, Canada, 1986

Families with wives employed full-time paid relatively more taxes and security costs than families with wives not employed.



Source: Family Expenditure Survey

On the one hand, a working wife contributes to the family's total income; on the other hand, her family's expenditure on certain items is likely to increase. Some recent U.S. studies¹⁴ have identified these items as household operations (including child care), private transportation, work-related and time-saving items, women's clothing, and the cost of food consumed away from home. Besides this increase in personal consumption expenditure, non-consumption expenditure on taxes and future security would also increase (since such expenditures are related to the wife's level of earnings).¹⁵

However, any additional family expenditure incurred because of the wife's working outside the home is bound to reduce her "gross" contribution to her family's income situation. For instance, in Canada, the average earnings of a wife employed full-time in 1986 accounted for 36% of the total income of her family (Table 6). The additional expenses on food away from home, household operations, clothing, transportation, personal taxes, and security could reduce her net contribution to family income by about half.

For Canada, the behavioural relationship between the wife's working status and a family's expenditure pattern was similar to that found in the United States. Families with wives employed full-time paid relatively more in personal income taxes and for future security (assuming that an additional earner pays individual income tax and security premiums based on his or her earnings) and hence, had relatively less to spend on personal consumption. In 1986, for example, Canadian families with wives employed full-time were left with 68 cents of their total spending dollar for personal consumption, compared with 74 cents for families with wives not working.

The per capita total expenditure for families with wives employed full-time was \$5,900 higher than for other families. Of the additional \$20,600 income of families with wives employed full-time, 39% was spent on such non-consumption items as personal income taxes and future security, 10% each on shelter and transportation, 7% on clothing, and 5% on food consumed away from home. About 7% of the additional income was not spent (at least according to the classification of total expenditure used).¹⁶

In terms of overall expenditure patterns, families with a wife employed full-time outside the home spent relatively less on total food and shelter but more on household operations (largely due to child care expenses) than families in which the wife was not employed. Of each dollar spent on food, the former group spent 28 cents on food consumed away from home compared with 18 cents for the latter group.

Table 6
Distribution of average expenditure of husband-wife families by wife's employment status, Canada, 1986

Item	Wife employed			Wife not employed	Total	Families with wives employed full-time versus families with wives not employed	
	Full-time*	Other	Total			Ratio of expenditure	Disbursement of additional income†
%							
Food:	12.3	13.8	13.1	15.4	13.8	124.2	6.3
At home	8.7	10.5	9.6	12.6	10.5	108.1	1.7
Away from home	3.5	3.3	3.4	2.8	3.2	196.3	4.6
Shelter	14.4	15.9	15.2	16.7	15.7	134.5	9.7
Household operations	3.2	3.2	3.2	2.7	3.1	180.7	3.7
Household furnishing and equipment	3.6	3.9	3.8	3.6	3.7	158.8	3.5
Clothing	6.6	6.3	6.4	5.9	6.3	173.8	7.3
Transportation:	12.8	13.6	13.2	14.0	13.4	142.1	10.0
Private	11.8	12.6	12.2	13.0	12.4	141.1	9.0
Public	1.0	1.0	1.0	1.0	1.0	155.1	1.0
Health care	1.6	1.8	1.7	2.0	1.8	121.2	0.7
Other expenditures	13.2	13.6	13.4	13.7	13.5	149.8	11.5
Total personal consumption	67.7	72.0	69.9	73.8	71.1	142.3	52.7
Personal taxes	22.3	19.2	20.7	17.8	19.8	195.0	28.5
Security	7.5	6.5	6.9	5.3	6.4	217.5	10.6
Gifts and contributions	2.5	2.3	2.4	3.1	2.6	129.1	1.5
Savings (income minus expenditures)	...	...	...	...	...	...	6.7
Total expenditure	100.0	100.0	100.0	100.0	100.0	...	93.3
Average expenditure	(\$ 54,000	45,100	49,000	34,800	43,500	155.3	...
Average earnings of wife	(\$ 19,800	7,700	13,000	...	8,000	...	...
Average earnings of husband	(\$ 24,300	24,500	24,400	17,900	21,900	...	...
Average income before taxes	(\$ 55,100	44,000	48,900	34,500	43,300	159.6	100.0
Average expenditure per person	(\$ 16,400	12,900	14,400	10,500	12,800	155.3	...
Average number of persons	3.3	3.5	3.4	3.3	3.4	...	...
Average age of reference person	41	40	40	53	45	...	...
Proportion of homeowners (%)	76	73	74	76	75	...	...

Source: Family Expenditure Survey

* A wife working 30 hours or more a week for at least 49 weeks a year is considered as "employed full-time".

† Average income of families with wives employed full-time was \$20,600 more than that of families with wives not employed.

Notes

¹ The unit of analysis in this paper is a "spending or consumer unit". A spending unit in most cases is equivalent to a household.

² Life cycle is proxied in terms of the age of the reference person as of December 31, 1986 in the Canadian FAMEX compared with "as at the time of the survey" in the American CES. In most instances, the head of the household is the reference person, that is, the person who is mainly responsible for the household's financial maintenance and/or who owns or rents the home.

³ A detailed comparison of incomes of Canadians and Americans by family characteristics will be published in a forthcoming issue of *Perspectives on Labour and Income*.

⁴ For example, the average size of a spending unit was 2.7 persons in Canada compared with 2.6 in the U.S.; the average age of the reference person was 47 years in both countries; and more than 70% of all spending units were families with two or more persons.

⁵ Since estimates of expenditures compared in this paper are derived from household surveys, these are subject to the sampling and non-sampling errors. For example, see Silberstein (1989), Bruning and Hu (1989), and Gieseman (1987) for a discussion on the effect on expenditure surveys of recall errors, demographic factors, and so on.

Average expenditures, overall or on specific items, are not compared due to differences in the purchasing power of two currencies. For instance, on the basis of the 1986 average market exchange rate of C\$1.389 = US\$1.00, a Canadian family would have required C\$13,890 to purchase an "equivalent" basket of goods and services costing US\$10,000 in the United States. However, on the basis of the 1986 Purchasing Power Parity of C\$1.252 = US\$1.00, a Canadian family would have paid C\$12,520 for the same basket. Thus, different conversion factors would lead to different interpretations (see Table 2, Slater (1988)).

⁶ Data on total incomes and personal income taxes paid by consumer units are underreported in the U.S. Consumer Expenditure Survey; for instance, for husband-wife families, the average income in 1986 was \$33,286 from this survey against \$43,635 from the Current Population Survey, conducted annually by the U.S. Bureau of the Census. Such a difference in estimates of income can be attributed to the manner in which data on incomes are collected in the two American surveys (see the source document used for the U.S. data).

Due to such underreporting in data on incomes collected in the U.S. Consumer Expenditure Survey, no attempt is made in this paper to compare savings/income ratios for households in Canada and the United States.

⁷ Some of this difference could be attributed to the survey methodology used to collect expenditure data on food. In the U.S., data on expenditures on food (and on housekeeping supplies, personal care products and services) were collected in a diary or recordkeeping survey independent of the quarterly interview panel survey that collected data on expenditures on other household items. In order to derive total expenditures of consumer units, data from these independently taken samples were integrated. In Canada, however, data on expenditures on food and other items were collected in the same survey questionnaire.

⁸ Any link between total income and expenditure of consumer units in the lowest income quintile should be interpreted with some caution since this group may include units whose expenditure patterns may be similar to those in the highest income quintile, even though their incomes for the period in question may have been lower. These units may include those largely in self-employment, farming, or those whose incomes may have dropped due to loss of job or some disability (in Canada, such households accounted for less than half a percent of the total number of households in 1986).

⁹ Differences in food expenditures in the two countries may also be attributable to differences in food prices arising from national policies on agricultural subsidies and the roles of different marketing boards (for milk, wheat, etc.), especially in Canada.

¹⁰ For instance, in 1984, the proportion of elderly households owning a motor vehicle was 71% in the U.S. compared with 58% in Canada (Chawla, 1990).

¹¹ See *The Number News*, September 1989 issue, about a summary of the U.S. expenditure patterns by household type.

¹² Details by work status of the wife for households in the United States are not contained in Table 6 because the source document used for the U.S. expenditure data did not contain such information.

¹³ See Bulletin no. 2267, pp.5-6, *U.S. Department of Labor* (1986). Also, see Walman and Jacobs (1978).

¹⁴ See *The Number News*, November 1988 issue; and Jacobs, et al (1989).

¹⁵ A family paying more for future security because the wife works should reap better income benefits during retirement since the wife would be entitled to receive her own pension income from Canada/Quebec Pension Plan and other work-related pension plans (if she had been covered by such plans). In other words, such a family would be less likely to live in poverty in its old age.

Notes – Concluded

¹⁶ One can interpret an excess of income over expenditure as a "saving"; we have, however, avoided using this concept mainly because this excessive income could have been spent on expenditure items not included

in the respective surveys. See also footnote 6 stating reasons for not comparing savings and other concepts involving income.

References

- Boyle, M. "BLS to Publish Quarterly Data from Consumer Expenditure Survey," *Monthly Labor Review*, Vol. 111, No. 7, Washington, D.C., July 1988, pp. 27-32.
- Boyle, M. "Spending Patterns and Income of Single and Married Parents," *Monthly Labor Review*, Vol. 112, No. 3, Washington, D.C., March 1989, pp. 37-41.
- Bruning, E.R. and M.Y. Hu. "The Role of Demographic Factors in the Analysis of Survey Versus Diary Purchase Reporting Accuracy." *Survey Methodology*, biannual, Catalogue 12-001, Vol. 15, No. 1, June 1989. Ottawa: Statistics Canada, pp. 59-70.
- Chawla, R.K. "Distribution of Wealth in Canada and the U.S." *Perspectives on Labour and Income*, quarterly, Catalogue 75-001E, Spring 1990. Ottawa: Statistics Canada, pp. 29-41.
- Fannsworth Riche, M. and D. Crispell. "Household Spending Patterns." *The Numbers News*, Vol. 9, No. 9, New York, September 1989, pp. 2-3.
- Fannsworth Riche, M. and D. Crispell. "Spending and Working Patterns of Wives." *The Numbers News*, Vol. 8, No. 11, New York, November 1988, pp. 3-4.
- Gieseman, R. "The Consumer Expenditure Survey: Quality Control by Comparative Analysis." *Monthly Labor Review*, Vol. 110, No. 3, Washington, D.C., March 1987, pp. 8-14.
- Harrison, B. "Spending Patterns of Older Persons Revealed in Expenditure Survey." *Monthly Labor Review*, Vol. 109, No. 10, Washington, D.C., October 1986, pp. 15-17.
- Jacobs, E., S. Shipp and G. Brown. "Families of Working Wives Spending More on Services and Nondurables." *Monthly Labor Review*, Vol. 112, No. 2, Washington, D.C., February 1989, pp. 15-23.
- Marr, W.L. *Consumption and Saving Patterns of the Foreign-Born in Canada*. Ottawa: The Institute for Research on Public Policy, January 1987.
- Silberstein, A.R. "Recall Effects in the U.S. Consumer Expenditure Interview Survey." *Journal of Official Statistics*, Vol. 5, No. 2, Stockholm, Sweden, September 1989, pp. 125-142.
- Slater, B. "Bilateral Comparison of Purchasing Parity Between Canada and the United States." *Canadian Economic Observer*, monthly, Catalogue 11-010, July 1988. Ottawa: Statistics Canada, pp. 4.1-4.9.
- Statistics Canada. *Expenditure Patterns and Income Adequacy for the Elderly, 1969-1976*, occasional, Catalogue 13-575. Ottawa, June 1980.
- Statistics Canada. *Family Expenditure in Canada, 1986*, occasional, Catalogue 62-555. Ottawa, March 1989.
- U.S. Department of Labor. *BLS Handbook of Methods*, Bulletin 2285. Washington, D.C.: U.S. Department of Labor, April 1988.
- U.S. Department of Labor. *Consumer Expenditure Survey: Integrated Survey Data, 1984-86*, Bulletin 2333. Washington, D.C.: U.S. Department of Labor, 1986.
- U.S. Department of Labor. *Consumer Expenditure Survey: Interview Survey, 1984*, Bulletin 2267. Washington, D.C.: U.S. Department of Labor, August 1986.
- Walman, E. and E.E. Jacobs. "Working Wives and Family Expenditures." *Proceedings of the Social Statistics Section*, Washington, D.C.: American Statistical Association, 1978, pp. 41-49.

Consumer spending in urban and rural Canada

Ernest B. Akyeampong

For many years, Canada's population has been expanding much more rapidly in urban centres than in rural areas. From 1976 to 1986, for example, the urban population increased by 11% (or 2 million), almost double the growth rate in rural areas (6% or 332,000). Moreover, this disparity in population growth widened in the '80s, when the urban growth rate was about five times that of the rural rate.¹

This uneven growth raises several questions. For instance, are there fundamental differences in consumer spending between urban dwellers and people living elsewhere? If so, how is faster population growth in cities affecting overall consumption patterns? And to what degree can we expect these patterns to change over time? Using data from the Survey of Family Expenditures (FAMEX), this paper examines whether spending patterns do in fact differ between urban and rural Canada, and if they have been changing in recent years.

Household profile

To better understand the spending patterns of Canada's urban and rural populations, it is essential to provide a brief profile of the "typical" urban and rural household.²

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In 1986, urban households were generally smaller than those found in rural areas, averaging 2.6 and 3.0 persons, respectively (Table 1). Urban households also tended to be headed by persons who were slightly younger (46 years versus 49 years).³ On the other hand, rural householders were more likely to be homeowners (85% versus 55%); they were also more likely to own at least one truck or automobile (89% versus 77%). Though the average number of persons earning a wage or salary at some time in 1986 was the same among urban and rural households (1.5), average annual household income before tax and total expenditures were both higher in urban areas.⁴

Spending patterns in 1986

Differences in spending patterns between urban and rural areas are a result of many factors. The disparity in household characteristics described in the preceding section are among the important ones. But so are differences in life styles and consumer prices. Available data from FAMEX cannot measure the impact of these additional factors, but some of their possible effects will be noted.

Aside from personal taxes, the three items featuring most prominently in the 1986 expenditure budgets of urban and rural households were food, shelter and transportation (Table 2). Together, these

Defining urban and rural areas

Urban areas are continuously built-up areas having a population concentration of 1,000 or more and a population density of 400 or more per square kilometre, based on the 1986 census. To be considered continuous, a built-up area must not have a discontinuity exceeding two kilometres. Rural areas are those lying outside urban areas.

Family Expenditure Survey (FAMEX)

The Family Expenditure Survey collects detailed information on the budget allocation of households in

Canada. Since 1953, it has been conducted at irregular intervals. The last survey took place early in 1987 and covered the preceding calendar year.

The main application of the survey results is to update the weights used to construct the Consumer Price Index. However, data from the survey have also been used in analysis relating to tax policy, welfare programs and market research.

Detailed information regarding FAMEX is available in *Family Expenditure in Canada* (62-555) or by contacting the Family Expenditure Surveys Section of the Household Surveys Division, Statistics Canada at (613) 951-9781.

Table 1
Selected characteristics of urban and rural households, 1986

		Urban	Rural
Number of households	('000)	7,297	1,552
Average household size	(persons)	2.6	3.0
Average number of earners	(persons)	1.5	1.5
Average age of head	(years)	46	49
Average annual household income before tax	\$	36,690	30,830
Average annual household expenditures	\$	36,240	30,180
Proportion of households owning home	%	55	85
Proportion of households owning at least one automobile or truck	%	77	89

Source: Family Expenditure Survey

items represented roughly 44% of the total budget in both types of households. However, the share of each item was different. For example, rural households allocated 15.4% of their budget to food, a bit more than the average share recorded for urban households (14.1%). The larger average size of rural households and the generally higher prices in remote areas probably contributed to this disparity.

A breakdown of the food allocation among urban and rural households reveals differences between the life styles of these two groups. For example, rural households spent a higher proportion of their food budget on store-bought food (usually prepared at home), while urban households spent a higher percentage on food purchased and prepared in restaurants, including fast-food outlets and cafeterias (Table 3).

Expenditures on shelter – rented or owner-occupied accommodation – accounted for a larger share of an average urban household's budget in 1986 (16.5%) than a rural household's budget (14.2%).⁵ Again, a detailed breakdown of the shelter costs revealed some interesting differences. For example, one-third of total shelter expenses incurred by urban households was spent on rent compared with only 11% for the predominantly homeownership rural population. In contrast, over one-half of shelter expenditures in rural households, compared with 43% for urban households, were allocated to owner-occupied accommodation costs, including home maintenance, property taxes and mortgage interest. Urban households also spent relatively less on utilities – water, oil, gas and electricity – than rural households (18% versus 30%). However, this is to be expected since utility expenses are often included in rental costs, and renting is more common in urban areas.

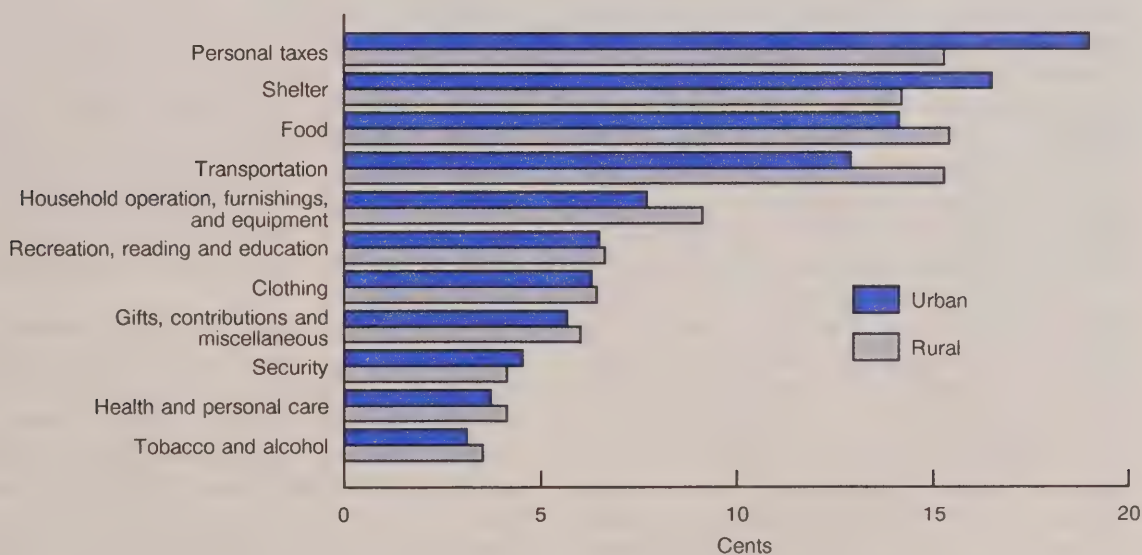
Table 2
Average annual expenditures of urban and rural households, 1986

	Expenditures		Shares	
	Urban	Rural	Urban	Rural
	\$		%	
Average annual expenditures	36,240	30,180	100.0	100.0
Food	5,090	4,640	14.1	15.4
Shelter	5,980	4,280	16.5	14.2
Household operation	1,540	1,480	4.2	4.9
Household furnishings and equipment	1,280	1,260	3.5	4.2
Clothing	2,280	1,920	6.3	6.4
Transportation	4,660	4,630	12.9	15.3
Health care	650	660	1.8	2.2
Personal care	700	580	1.9	1.9
Recreation	1,800	1,630	5.0	5.4
Reading materials	210	170	0.6	0.6
Education	320	190	0.9	0.6
Tobacco and alcohol	1,140	1,060	3.1	3.5
Security (CPP/QPP, insurance plans)	1,630	1,240	4.5	4.1
Gifts and contributions	1,160	970	3.2	3.2
Miscellaneous	910	850	2.5	2.8
Personal taxes	6,890	4,620	19.0	15.3

Source: Family Expenditure Survey

How a typical household's dollar was spent in 1986

The most prominent differences between urban and rural household expenditure patterns were observed for taxes, shelter and transportation.



Source: Family Expenditure Survey

Table 3
Average annual expenditures of urban and rural households, selected items, 1986

	Expenditures		Shares	
	Urban	Rural	Urban	Rural
	\$		%	
Food	5,090	4,640	100.0	100.0
Purchased from stores	3,740	3,740	73.4	80.7
Purchased from restaurants	1,320	870	26.0	18.8
Other	30	30	0.6	0.5
Shelter	5,980	4,280	100.0	100.0
Rented accommodation	1,990	460	33.3	10.7
Owner-occupied accommodation	2,570	2,230	43.0	52.0
Utilities	1,050	1,300	17.5	30.4
Other accommodation	370	290	6.2	6.9
Transportation	4,660	4,630	100.0	100.0
Private	4,190	4,430	90.0	95.7
Public	470	200	10.0	4.4

Source: Family Expenditure Survey

Transportation expenses were also notably different between urban and rural households. Rural households spent more (15.3% of their total budgets) than their urban counterparts (12.9%). Differences in modes of transportations in the two areas are clearly evident when the transportation budget is split into its main components. In rural areas, where owning a car is more common, both the expenditures and budget share associated with having a vehicle were higher. These higher expenses may reflect the added costs of commuting long distances to shop and work. In contrast, urban household expenditures on public transportation were over twice those of rural households.

Rural dwellers allocated a larger percentage of their budget to day-to-day household operation, furnishings and equipment than did their urban counterparts (9.1% versus 7.7%). Higher expenditures on long distance telephone calls and the care of pets by rural households were partly responsible for this difference. The smaller percentage of the urban household's budget directed to household furnishings and equipment partly reflects the fact that rental

accommodations are more likely to include carpets and household appliances (for example, refrigerators and stoves).

Among urban and rural households, shares allocated to clothing and personal care were virtually identical (about 6% and 2%, respectively), as were shares for reading materials and gifts and contributions. However, health care and recreational expenses both represented slightly higher percentages of the rural budget. The variance in health care costs may be related to differences in urban and rural drug prices and average household size. The disparity in the recreational budget is mainly due to higher expenditures on recreational vehicles in rural areas.

In 1986, at least 3% of both the urban and rural budgets was spent on tobacco and alcoholic beverages.⁶ On average, rural households spent more on tobacco products (\$550), while urban households purchased more alcoholic beverages (\$630). Furthermore, urban households spent a larger proportion of their alcohol budget in licensed premises (36%) than their rural counterparts (28%).

Urban households directed a marginally higher proportion of their expenditures to future security (namely, pensions, life insurance, unemployment insurance, Canada and Quebec Pension Plans and Registered Retirement Savings Plans). More specifically, FAMEX data showed that the average retirement and pension fund payments of urban dwellers (\$820 per household in 1986) exceeded those of persons living in rural areas (\$640). Similarly, urban households spent more on unemployment insurance payments than rural households (\$490 versus \$360). This is not surprising since self-employed workers (such as farmers) are excluded from unemployment insurance coverage, and self-employment is more prevalent in rural areas.

Changes in expenditure patterns, 1978-1986

Have household expenditure patterns changed over the years? Using data from three survey years, this question is examined from two different perspectives. First, how does the urban versus rural household budget breakdown of 1978 compare with 1982 and 1986? Second, within each area, has the allocation pattern changed over the same period?

With respect to the first question, the data show hardly any change in urban versus rural budget patterns. For most items showing a higher allocation in urban areas in 1978 (shelter) or in rural areas (transportation), the pattern was repeated in 1982 and 1986 (Table 4).

Table 4

Percentage distribution of average annual expenditures of urban and rural households, 1978, 1982 and 1986*

	Urban			Rural		
	1978	1982	1986	1978	1982	1986
	%					
Average annual expenditures	100.0	100.0	100.0	100.0	100.0	100.0
Food	16.8	15.0	14.1	18.2	16.4	15.4
Shelter	16.8	17.9	16.5	14.8	15.8	14.2
Household operation	3.8	4.3	4.2	4.3	4.8	4.9
Household furnishings and equipment	4.3	3.5	3.5	4.8	4.0	4.2
Clothing	7.2	6.1	6.3	7.2	6.0	6.4
Transportation	12.3	11.6	12.9	16.3	14.3	15.3
Health care	1.9	1.9	1.8	2.1	2.0	2.2
Personal care	1.7	1.8	1.9	1.6	1.8	1.9
Recreation	5.1	4.6	5.0	4.9	4.8	5.4
Reading materials	0.6	0.6	0.6	0.5	0.5	0.6
Education	0.7	0.7	0.9	0.5	0.5	0.6
Tobacco and alcohol	3.3	3.3	3.1	3.2	3.4	3.5
Security (CPP/QPP, insurance plans)	4.4	4.4	4.5	3.6	4.0	4.1
Gifts and contributions	2.5	3.0	3.2	2.5	2.9	3.2
Miscellaneous	2.4	2.8	2.5	3.0	3.5	2.8
Personal taxes	16.1	18.3	19.0	12.4	15.5	15.3

Source: Family Expenditure Survey

* Shares for 1978 and 1982 may not correspond exactly to those previously published because of slight changes in measurement concepts.

However, a number of shifts over time are apparent. The 1981-82 recession appears to have contributed to some of these. For example, in both urban and rural households, the budget share for clothing, transportation, and recreation dropped between 1978 and 1982 and rose between 1982 and 1986. On the other hand, high mortgage interest rates in the early '80s may explain the relatively large shelter costs in 1982 in both urban and rural areas. High interest rates may also have discouraged the purchase of automobiles and other motor vehicles reflected in the decline in transportation expenditures in 1982.

Some shifts appear to have been influenced by longer-term economic or social trends. For instance, the share assigned to food, by urban and rural households alike, steadily declined between 1978 and 1986, while the share for gifts and contributions increased.

The share of an urban household's total expenditure on taxes also rose continuously, from 16% in 1978 to 19% in 1986. At the beginning of this period, taxes

were the average urban household's third highest expenditure item, after food and shelter (Table 4); by 1986, taxes had jumped to the number one position. Among rural households, taxes also rose between 1978 and 1982, but appear to have stabilized at about 15% since then. In 1978, taxes ranked as the fourth highest expenditure item in rural households; however, they about tied with food and transportation expenditures for first place in 1986.

Conclusion

This study of FAMEX data clearly reveals that there are both similarities and differences in the way urban and rural households spend their income, and that these differences tend to persist over time. The data further show that within each population group, the allocation tends to fluctuate in response to socio-economic changes. These findings are particularly useful in the development of area-specific economic and social programs, and can also aid in market research. □

Notes

¹ Immigration was an important source of the population growth in large cities.

² The basic unit of measurement in FAMEX and in this article is the "spending unit". A spending unit is a financially independent individual living alone, or a group of people living in the same dwelling who depend on a common or pooled income for major expenses. Never-married children living with their parents are always considered to form part of their parents' spending unit.

Although the data in this article pertain to spending units, the term "household" is used instead. (In practical terms, spending units are almost all households. Only about 1% of households are multi-spending units.)

³ The head of the household is the individual mainly responsible for the household's financial maintenance.

⁴ Household income before tax refers to the total income of all individuals in the household during the year. This includes gross income from wages and salaries, net income from self-employment, military pay and allowances, net rentals, family allowances, interest and dividends, pension income, unemployment insurance benefits, workers' compensation, child tax credits, welfare, and miscellaneous income.

⁵ Urban housing expenditures may appear to be lower than many people might expect, but high shelter costs in cities like Toronto and Vancouver have been averaged with cheaper accommodation costs in smaller cities to produce the results shown here.

⁶ Statisticians have long noticed a serious under-reporting of expenditures on tobacco and alcohol, especially the latter.

References

Banta, S.M. "Consumer Expenditures in Different-Sized Cities." *Monthly Labor Review*, Vol. 112, No. 12, Washington, D.C., December 1989, pp. 44-47.

Department of Employment. "Pattern of Household Spending in 1988." *Employment Gazette*, London, U.K., February 1990, pp. 71-78.

Rogers, J.M. "Expenditures of Urban and Rural Consumers, 1972-73 to 1985." *Monthly Labor Review*, Vol. III, No. 3, Washington, D.C., March 1988, pp. 41-46.

Statistics Canada. *Family Expenditure in Canada, 1986*. Occasional, Catalogue 62-555, Ottawa, March 1989.

Statistics Canada. *1986 Census Canada: Dictionary*, Catalogue 99-101E, Ottawa, January 1987.

Under the influence

Dave Gower

Alcohol and drug abuse has become one of the most important social issues of our times, not only in Canada but throughout the world. Campaigns against drunk driving, for example, received widespread public support during the '80s. As the 1990s begin the concern deepens, augmented by the spread of the AIDS virus through shared needles and the propagation of new and powerful drugs such as "crack".

Some people feel that as long as substance abuse does not affect them or their families, it is not their problem. In economic terms, however, the costs of substance abuse are spread throughout society. The Addiction Research Foundation in Ontario estimates that Canadian labour productivity lost due to substance abuse totalled \$5 billion in 1984 alone.¹

In order to gather data on this important topic, the National Alcohol and Drug Survey (NADS) was conducted by Statistics Canada in March 1989 (see *The National Alcohol and Drug Survey*). When one thinks of substance abuse and work, the first image that comes to mind is the worker who uses alcohol or other drugs on the workplace. NADS did not provide data on that directly. However, even if it occurs outside the workplace, substance abuse can affect a person's attendance record as well as job performance.

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One of the major points to be addressed is whether substance abuse is a response to living in socially and economically deprived conditions, or whether it is widely spread through different economic levels of society. This article examines NADS data in terms of what they reveal about Canadians who consume alcohol and drugs.

Substance use: One definition

Perceptions about what constitutes a drug or alcohol problem vary. The same amount of consumption of a substance may have quite different results in different people. Nevertheless, to study this topic in a meaningful way, it is necessary to establish categories that can be defined, measured and understood. Since the impact of substance use cannot be easily measured directly, data on the amount and type of substance consumed are used as a measure of the seriousness of a person's substance use.

Definitions of substance use categories were formed to meet the needs of this study. They are not intended to be official descriptions of people who have a drug or alcohol problem.

Following current medical and addictions terminology, alcohol is defined as one of a family of recreational mood-altering drugs, rather than a substance separate from drugs. However, recognizing that it is the drug of choice of a large proportion of

The National Alcohol and Drug Survey

The National Alcohol and Drug Survey (NADS) was sponsored by Health and Welfare Canada and conducted by Statistics Canada in March 1989. It surveyed about 12,000 respondents by the random dialing of telephone numbers. Questions asked included one's own consumption of alcohol and other drugs, consumption patterns and behaviour of one's family, friends and other persons, attitudes towards mood-altering substances, as well as personal information such as education, income, main labour market activity in the past year, and family status.

Most of the questions on substance use made a distinction between consumption in the 12 months prior to March 1989 and consumption in an earlier period. In this study, we focus only on those who had used alcohol or other drugs in the 12 months preceding the survey.

Canadians, statistics on alcohol use are presented separately in this report. Most people would agree that moderate alcohol consumption is not necessarily harmful; indeed, there is evidence that it may even be beneficial for some people.² Therefore, casual drinkers are separated from those whose drinking seems heavy enough to cause possible problems.

The definitions used in this study are:

Drinkers

- all those who reported that they had consumed alcohol in the 12 months preceding the survey;

"Heavy" drinkers

- people who reported that they drank more than a certain number of drinks in the week prior to the survey (11 for women, 14 for men)³ or;
- people who consumed five or more drinks on one occasion 52 or more times in the past year;

"Other drug" users

- people who admitted to consuming illegal or "street" drugs, such as marijuana, hashish, cocaine, LSD, heroin or "speed" in the past year.

Two major limitations of the survey results may affect the interpretation of the data. First, some people do not have telephones and hence were left out of the survey. Although this is only a small fraction of the total population, patterns of use within this group can be expected to be significantly different from the general population. A second limitation is "denial", or deliberate understatement of substance use. It seems reasonable to suspect that some people may be uncomfortable about disclosing their substance use in full and therefore downgrade their reported consumption. Furthermore, people in some groups may feel a greater reluctance to report heavy substance use than others. However, in this study the thresholds for "heavy" alcohol use have been set fairly low, so it is hoped that most of these people will be captured.

For these reasons, many of the estimates presented here on heavy substance users are probably minimum values.

Prescription and over-the-counter drugs (for example, valium, anti-depressants, diet pills, cold remedies) can also be used improperly or without restraint. However, these legitimate drugs are not included in this study because of the difficulty in identifying people who abuse them.

An overview

First, let's examine patterns of substance use in the Canadian population.⁴ Heavy alcohol use is most commonly admitted by men aged 15-24. Alcohol use, whether heavy or otherwise, is reported by a decreasing proportion of both men and women after age 55. This decline may be due to a drop in consumption as people get older. Other factors may include a higher incidence of early death among heavy drinkers which would push these percentages down.

Men aged 15-24 are also the heaviest drug users: nearly one in five report using drugs. Drug use drops off to very low levels after age 35 for both men and women. For heavy alcohol and drug users over age 25, usage rates for men are more than double those of women; however, for drug users under 25, the percentage differences are not so great, at 19% and 12%, respectively.

Table 1
Use of alcohol and other drugs in the 12-month period ending March 1989

	Population	Used alcohol		Used other drugs
		Total	"Heavy" drinkers	
	'000		%	
Both sexes	20,285	78	7	7
Age 15-24	3,899	81	10	16
Age 25-34	4,670	87	7	11
Age 35-54	6,663	80	8	3
Age 55 +	5,052	63	5	--
Men	9,920	84	12	9
Age 15-24	1,983	85	15	19
Age 25-34	2,318	92	12	16
Age 35-54	3,320	85	13	5
Age 55 +	2,299	73	8	--
Women	10,365	72	3	4
Age 15-24	1,916	78	4	12
Age 25-34	2,352	82	3	7
Age 35-54	3,343	76	3	2
Age 55 +	2,753	54	--	--

Source: National Alcohol and Drug Survey

Multiple use common

People who use alcohol are more likely to use other drugs, and vice versa. Only 7% of all Canadians over age 15 reported using drugs other than alcohol, compared to 26% of "heavy" drinkers. The percentage of heavy drinkers among the general population was also 7%, but among drug users it rose to 28%. Nearly 400,000 Canadians fell into both the "heavy drinker" and "other drugs" categories.

In spite of this overlap, people who use alcohol are often quite different from those who use other drugs.

Use by education and income

Some people think of substance abuse as a symptom of economic deprivation. If this is true, then one would expect to see much higher usage among persons with lower levels of education and income than among more advantaged Canadians. The survey results tell quite a different story.

High substance use rates are not associated with lower levels of education. The relationship is much more complex. People in the lowest education levels (those with some secondary school or less) have a frequency of drug and heavy alcohol use that is about average.⁵ This pattern continues up to the level of high school graduation. However, at this point the picture changes. Usage rates for both alcohol and other drugs jump dramatically among the "post-secondary not completed" category.⁶ Finally, usage rates drop again for those who have completed their postsecondary education, and even more so for university graduates.

The pattern of substance use by education is similar for both men and women, and certainly does not support the idea that substances are used as a reaction to economic deprivation. But education is only one way of looking at economic status. What happens when we look at income?

Table 2
Use of alcohol and other drugs in the 12-month period ending March 1989, by education

	Population	Used alcohol		Used other drugs
		Total	"Heavy" drinkers	
	'000		%	
Both sexes	20,285	78	7	7
Some secondary or less	6,744	66	8	5
Completed secondary	5,668	81	8	7
Postsecondary, total	7,577	86	7	8
Postsecondary not completed	2,470	87	10	11
Completed postsecondary	5,107	86	6	7
University degree	2,865	87	5	7
Men	9,920	84	12	9
Some secondary or less	3,349	75	13	7
Completed secondary	2,597	88	13	11
Postsecondary, total	3,858	89	11	10
Postsecondary, not completed	1,235	89	15	14
Completed postsecondary	2,623	90	9	8
University degree	1,606	90	7	8
Women	10,365	72	3	4
Some secondary or less	3,395	57	3	3
Completed secondary	3,071	76	3	3
Postsecondary, total	3,719	83	4	7
Postsecondary, not completed	1,235	85	5	8
Completed postsecondary	2,484	82	3	6
University degree	1,259	84	--	7

Source: National Alcohol and Drug Survey

Note: Table does not add due to an "education not stated" group.

The income data available in NADS relate to total household income. For some families, such as lone parents, household income reflects the personal earnings of an individual. For others, especially dual-earner husband-wife families, the connection is weaker. However, for many people, household income reflects the amount of "discretionary income" at their disposal (that is, the money left over after purchasing essentials). Furthermore, household income is a useful measuring stick for what might be called "social status".

Alcohol use rises with income

The reported frequency of alcohol consumption, whether "heavy" or otherwise, rises with household income. This is partly because men, whose incomes tend to be higher than women's, drink more. But even when the data for the two sexes are examined separately, there is still an indication of a positive relationship. This finding agrees with a report by the Ontario Addiction Research Foundation, which states that alcohol consumption is positively related to income.⁷

Table 3
Use of alcohol and other drugs in the 12-month period ending March 1989, by household income

	Population	Used alcohol		Used other drugs
		Total	"Heavy" drinkers	
	'000		%	
Both sexes	20,285	78	7	7
Under \$40,000	9,385	74	7	7
Under \$20,000	3,798	64	6	7
\$20,000-\$29,999	2,368	79	8	5
\$30,000-\$39,999	3,220	81	8	7
\$40,000 and over	7,689	89	9	7
\$40,000-\$59,999	4,380	86	9	7
\$60,000 and over	3,309	92	9	8
Men	9,920	84	12	9
Under \$40,000	4,324	80	12	9
Under \$20,000	1,515	73	11	10
\$20,000-\$29,999	1,154	83	13	8
\$30,000-\$39,999	1,655	83	11	9
\$40,000 and over	4,327	91	13	10
\$40,000-\$59,999	2,355	91	13	9
\$60,000 and over	1,972	92	13	10
Women	10,365	72	3	4
Under \$40,000	5,062	69	3	5
Under \$20,000	2,283	58	--	6
\$20,000-\$29,999	1,214	76	--	--
\$30,000-\$39,999	1,564	78	--	5
\$40,000 and over	3,363	86	4	4
\$40,000-\$59,999	2,025	82	--	4
\$60,000 and over	1,337	91	--	5

Source: National Alcohol and Drug Survey

Note: Table does not add due to an "income not stated" group.

Of course, education and income tend to be related: in general, people with higher education live in wealthier households. What happens when we include both of these variables and look at substance use?

No matter what a person's education level, a higher household income seems to go along with a slightly higher average frequency of reported alcohol consumption; this applies to "heavy" drinking as well. When income is taken into account, the likelihood of being a heavy drinker decreases with a higher education. Among those with a household income less than \$40,000, heavy drinking steadily declines

from 8% to 5% as education rises; in households with a higher income, the proportion of heavy drinkers falls from 11% to 6%.

Once again, the impact of higher incomes among men compared with women raises a question about the relationship between income and consumption. To address this, one can look at the data for men only. (Not enough women reported heavy drinking to show this level of detail.) The impact of income on drinking levels remains evident.

Table 4
**Use of alcohol and other drugs in the 12-month period ending March 1989, by
 education and income**

	Used alcohol		Used other drugs
	Total	"Heavy" drinkers	
		%	
Both sexes			
Some secondary or less			
Under \$40,000	64	8	4
\$40,000 or more	84	11	7
Completed secondary			
Under \$40,000	78	7	6
\$40,000 or more	89	9	8
Postsecondary, total			
Under \$40,000	82	6	11
\$40,000 or more	90	8	7
Completed postsecondary			
Under \$40,000	81	5	10
\$40,000 or more	90	6	6
Men			
Some secondary or less			
Under \$40,000	74	13	6
\$40,000 or more	87	15	10
Completed secondary			
Under \$40,000	84	11	10
\$40,000 or more	94	15	11
Postsecondary, total			
Under \$40,000	85	11	13
\$40,000 or more	92	11	9
Completed postsecondary			
Under \$40,000	85	8	11
\$40,000 or more	92	9	7

Source: National Alcohol and Drug Survey

Note: The number of female drug users and heavy drinkers is not sufficient to show this level of detail.

Income and drugs: No clear relationship

The use of drugs other than alcohol is reported by a very similar percentage of people at widely differing income levels. For example, the percentage of people reporting drug use was 7% among people living in households with income under \$20,000 a year, and 8% among persons in households with \$60,000 or more.

Looking at both income and education simultaneously, the picture becomes more complicated. Among persons with a high school education or less, higher income levels seem to correlate with higher rates of

drug use. Among persons who continued beyond high school, the opposite is the case: wealthier people have markedly lower rates of drug use.

The complication in understanding this difference is that the earnings-age profile of workers differs for people of different educational levels. Professionals, for example, often have peak earnings later in life, whereas this is not always true for manual workers. Since people over age 35 seldom use drugs, this may account for the lower drug use among higher-income educated people. Given the limitations of

the available data, it is difficult to separate all these factors.

For drugs other than alcohol, therefore, the picture is a complex one. It seems safe to say that there is no evidence of a strong relationship between income level and drug use.

Use varies with labour force attachment

The questions on labour force attachment in the National Alcohol and Drug Survey differ from the conventional questions the Labour Force Survey (LFS) uses to produce its monthly statistics. The LFS asks respondents about their activity in one reference week each month; NADS asks for

their main activity in the previous 12 months. For most categories (working, keeping house, going to school, retired), the resulting numbers are quite close to the LFS data. However, the number of unemployed persons is quite different. Only people who say that their main activity in the past 12 months was looking for work are included in the NADS unemployment total. Since this eliminates people who were unemployed for less than half of the year, the NADS estimate is about half of the "official" LFS total of the unemployed (470,000 compared with about 1 million).

The limited sample size prevents a full analysis of substance use patterns among people who were mainly looking for work in the past year. Data of marginal

Table 5
Use of alcohol and other drugs in the 12-month period ending March 1989, by main activity

	Population	Used alcohol		Used other drugs
		Total	"Heavy" drinkers	
	'000		%	
Both sexes				
Labour force	12,310	85	10	8
Not in labour force, total	7,582	66	4	5
Going to school	2,265	77	5	14
Retired	2,587	59	5	--
Keeping house	2,730	63	--	--
Men				
Labour force	7,193	88	13	10
Not in labour force, total	2,504	73	8	8
Going to school	1,133	79	8	17
Retired	1,313	68	8	--
Keeping house	--	--	--	--
Women				
Labour force	5,118	81	4	6
Not in labour force, total	5,078	62	2	3
Going to school	1,133	75	--	11
Retired	1,273	50	--	--
Keeping house	2,672	63	--	--

Source: National Alcohol and Drug Survey

Note: The numbers do not add to total population because of a "labour force status not stated" category.

reliability indicates that the drug use of this group is perhaps twice as frequent as among those who mainly worked in the past year, and heavy alcohol use somewhat more common.

Because of the small size of the "looking for work" category, it is included with the "working" category to produce a "labour force" class.

Labour force participants report higher levels of alcohol consumption than people in other activity categories. Among men, this relationship is heavily influenced by the fact that older men, who drink less, are more likely to be retired. If we look only at men aged 25-54, the percentage of heavy drinkers is almost identical in and out of the labour force, at 12%-13%.

For women, however, the link between alcohol consumption and labour force activity cannot be easily explained by age patterns. Among women aged 25-54, the percentage of labour force participants reporting "heavy" drinking is 4%. But for women in this age group not in the labour force, the estimate of reported "heavy" drinkers is so small that it cannot be measured accurately: the percentage of heavy drinkers is therefore much less than 4%.

Persons mainly going to school show much higher levels of drug use than other persons. This finding reflects the results for young people. But the picture is not as simple with respect to alcohol. Students report lower rates of heavy alcohol consumption than young people as a whole. This difference may be explained by the fact that, as has been seen, alcohol consumption appears to be income-related.

What kinds of workers use substances?

In earlier sections of this study we saw that different groups in society have different levels of substance use. We also saw that

people in the labour force had higher levels of alcohol consumption than others. Are there differences among groups of workers?

"White collar" occupations tend to have lower levels of heavy alcohol and other drug use than "blue-collar". The lowest rates were found among professionals, the highest in construction jobs and in transportation equipment operation and materials handling jobs. This held true for both alcohol and other drugs.

One consideration that comes to mind is that the proportion of men and women varies between occupational groups, with men dominating some job categories and women predominant in others. Since men have higher rates of substance use, could this explain the occupational differences?

Standardization

Standardization is a fairly conventional procedure used to demonstrate the impact of a variable. It is particularly useful where sampling variance prevents a breakdown of the data into full detail. In the case of a male/female split within occupations, the standardized rate of substance use is calculated as follows, using "heavy drinkers" as an example:

- The percentage distribution of men and women is calculated for the "all occupation" category (41.6% women, 58.4% men).
- These percentages are applied to the total of each occupation, producing "standardized" values for the number of men and women in each occupation.
- The percentage of heavy drinkers is calculated for men and women in each occupation, using real data.
- These percentages are applied to the "standardized" values for the number of men and women in each occupation, to produce "standardized" estimates of the number of male and female heavy drinkers in each occupation.
- These estimates are added together, and divided by the total number of workers in the occupation to produce the "male/female ratio standardized percentage of heavy drinkers" in that occupation. (In construction, there are too few women workers to calculate a usable percentage of heavy drinkers.)

Table 6
Use of alcohol and other drugs by persons mainly working in the 12-month period ending March 1989, by occupation

	Population	Used alcohol		Used other drugs
		Total	"Heavy" drinkers	
	'000		%	
All occupations	11,841	85	10	8
White collar	8,034	85	7	7
Managerial, administrative	1,718	87	8	7
Professional	2,013	88	4	5
Clerical and sales	2,848	84	8	8
Service	1,195	78	8	9
Blue collar	3,747	86	15	9
Processing, machine fabri-				
cating, assembly and repairs	1,599	86	13	8
Construction	753	87	21	12
Transportation equipment opera-				
tions and materials handling	710	88	17	10
Standardized for male/female ratio				
All occupations		85	10	8
White collar		86	8	7
Managerial, administrative		87	8	7
Professional		89	4	5
Clerical and sales		85	10	9
Service		79	10	9
Blue collar		82	12	7
Processing, machine fabri-				
cating, assembly and repair		82	10	7
Construction*		--	--	--
Transportation equipment opera-				
tion and materials handling		86	14	8

Source: National Alcohol and Drug Survey

* Number of women in this occupation insufficient to permit standardization.

Note: Table does not add because of an "occupation not stated" group.

A technique for investigating this is to "standardize" the percentages. Briefly put, standardizing estimates the percentage of persons using drugs or alcohol which would exist in a particular occupation if the male/female ratio were the same across all occupations (see *Standardization*).

Some of the occupational differences in substance use are indeed accounted for by differences in the male/female ratio. For example, after standardization the gap in heavy alcohol usage rates between white-collar and blue-collar workers drops from eight percentage points (7% versus 15%) to four percentage points (8% versus 12%). The

percentages of heavy alcohol use among clerical, sales and service workers is lower than average, but when the male/female split is allowed for, their rates rise to the average. With that technique, drug use also becomes much more homogeneous among occupations.

However, differences remain. For example, the proportion of professional workers with heavy alcohol use is still less than half the average, and their use of other drugs also remains lower. This confirms the earlier finding that serious substance use is lower for university graduates than for other persons.

Substance use varies geographically

The use of substances varies not only with the kind of work a person does, but also with where he or she lives.

Although there is a link between income and alcohol consumption for Canada as a whole, this relationship does not apply particularly well when comparing the provinces. For example, Newfoundland, with a relatively low average wage, has a higher reported frequency of heavy alcohol use than other provinces. The province with the highest average income, Ontario, has frequencies about the same as the national average.

For drugs other than alcohol, the picture also varies. Newfoundlanders reported low rates of use, along with residents of Prince Edward Island, Manitoba and Saskatchewan. These lower rates of drug use may reflect more traditional values still existing in smaller urban areas and in rural Canada.

Conclusion

Most Canadians over age 15 reported consuming at least some alcohol in the 12 months ending March 1989. About one in 14 admitted to "heavy" drinking (using the definitions adopted for this study), and a similar proportion reported using illicit drugs.

Table 7
Alcohol and other drug usage in the 12-month period ending March 1989, by province

	Population	Used alcohol		Used other drugs
		Total	"Heavy" drinkers	
	'000		%	
Canada	20,285	78	7	7
Labour force	12,310	85	10	8
Newfoundland	427	68	9	5
Labour force	245	79	14	6
Prince Edward Island	98	64	6	5
Labour force	59	72	8	6
Nova Scotia	690	71	6	7
Labour force	389	82	8	9
New Brunswick	552	68	6	6
Labour force	314	79	8	8
Quebec	5,237	76	7	7
Labour force	3,141	86	10	8
Ontario	7,486	78	7	6
Labour force	4,600	84	9	7
Manitoba	830	79	7	5
Labour force	500	86	9	5
Saskatchewan	748	78	7	5
Labour force	433	86	9	6
Alberta	1,826	82	7	7
Labour force	1,189	88	9	8
British Columbia	2,390	83	9	10
Labour force	1,440	87	12	11

Source: National Alcohol and Drug Survey

Substance use is widespread throughout society, but appears to be more common in some groups than others. In particular, men report these activities much more often than women, and young people more often than older persons. Consumption of drugs other than alcohol is rarely reported by people over age 35.

People who are in the labour force tend to use alcohol and other drugs more often than others. For men, this can be explained largely by the different age patterns of persons in and out of the labour force. For women, however, labour force participation seems to have a more direct impact on substance use.

Except for lower rates among university graduates, the percentages of drug users are similar in most educational

groups for households making over \$40,000 a year. Among lower income households, usage rates rise with educational level, reflecting the larger proportion of young people.

Finally, a higher income seems to be related to a higher frequency of alcohol use. This is true for both men and women, and also exists within different educational categories.

Little evidence exists to support the idea that economic deprivation provides a strong explanation for substance use patterns in Canada. Indeed, the picture is similar across the economic spectrum. To explain the use of mood-altering drugs one may need to look outside the field of economics. □

Notes

¹ See Adrian, M., P.M. Jull, and R.T. Williams. "Statistics on Alcohol and Drug Use in Canada and Other Countries", pp. 54-56.

² See Statistics Canada, *Health and Social Support, 1985*, General Social Survey Analysis Series, p. 45.

³ The effect of a certain level of alcohol consumption on the human body depends on a number of factors. Many of these are difficult to measure in a statistical survey. One item for which data was available, however, is body weight. Different alcohol consumption cutoffs were specified based on a ratio of average female to male body weight as reported in NADS. It is hoped that this will improve the validity of the comparison of male and female alcohol consumption patterns.

⁴ Readers who want a more extensive look at substance use patterns should consult Eliani et al.

⁵ The substance use patterns for the "some secondary or less" education level are partially caused by a disproportionate percentage of older persons in this lower education group. These older persons, particularly women, have below-average levels of substance use. If one looks at lower educated people under age 55, the percentage of "heavy" drinkers climbs to 9%; closer to, but still lower than, the value for people with some postsecondary education.

⁶ The suspicion arises as to whether students might be affecting this pattern, pushing up substance use levels for the "postsecondary not completed" group. In fact, removing the students does not alter the patterns in any significant way.

⁷ See Adrian, M. and B.S. Ferguson. "The influence of income on the consumption of alcohol in Ontario: a cross-section study," in Carmi, A. and S. Schneider, eds., *Drugs and Alcohol* (Medico-legal Library Series); Berlin, Springer-Verlag, 1986, pp. 151-157.

References

Adrian, M. "Economic Costs to Society of Alcohol Problems in Ontario and Canada." *Proceedings of the 34th International Congress on Alcoholism and Drug Dependence*, Calgary, Alberta, Canada, August 4-10, 1985, pp. 181-183.

Adrian, M. and B.S. Ferguson. "Demand for Domestic and Imported Alcohol in Canada." *Applied Economics*, Vol. 19, No. 4, London, U.K., April 1987, pp. 531-540.

Adrian, M., P.M. Jull and R.T. Williams. "Statistics on Drug Use." *Statistics on Alcohol and Drug Use in Canada and Other Countries*, Vol. II, Toronto, Ontario, Canada, 1989, pp. 526.

Eliani, M. et al. *National Alcohol and Other Drugs Survey: Highlights Report*. Ottawa: Health and Welfare Canada, June 1990.

Statistics Canada. *General Social Survey: Health and Social Support, 1985*. Analysis Series, occasional, Catalogue 11-612E, December 1987, Ottawa.

Working Group on Alcohol Statistics. *Alcohol in Canada: A National Perspective*. Ottawa: National Health and Welfare Canada, 1984.

The price of labour

Henry Pold and Fred Wong

Labour compensation studies often focus exclusively on wages and salaries. But workers receive more than earnings from a job. The economic benefits accruing to paid workers from their employment also include a range of non-wage items. These include employers' contributions to pension, medical and dental plans and unemployment insurance; and premiums for life insurance and workers' compensation.

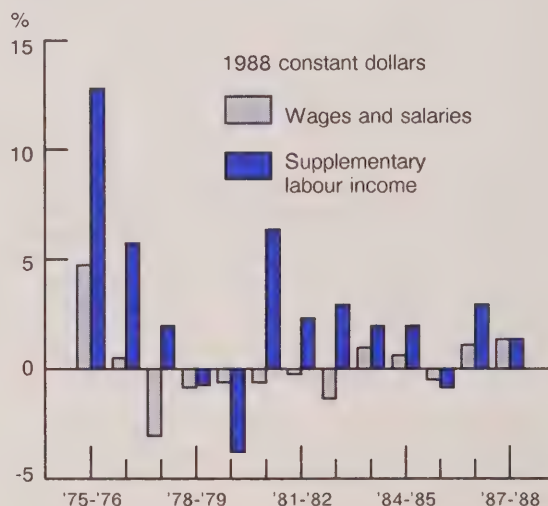
The non-wage component of labour income has risen dramatically over the years as a consequence of pension reforms, changes in unemployment insurance regulations, and the increasing portion of medical and dental plan premiums paid by employers. A more complete picture of labour compensation, including its effects on employers' labour costs and workers' economic welfare, requires an analysis of both wage and non-wage components.

This article examines trends in the two major components of labour income since the mid-70s,¹ spanning both a major inflationary period and the worst recession since the 1930s. Developments by industry and province are also discussed.

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Change in average annual labour income, 1975 to 1988

From 1975 to 1988, supplementary labour income grew relatively more than wages and salaries.



Sources: Labour Force Survey and Estimates of Labour Income

Divergent trends in wage and non-wage labour income

In 1988, Canadian paid workers earned an average of \$29,969 in labour income, comprising wages and salaries and supplementary labour income. (For definitions of these terms, see *Labour compensation*

Labour compensation concepts

As defined by the System of National Accounts, labour compensation comprises all benefits accruing to workers for labour services rendered: wages and salaries, supplementary labour income and fringe benefits.

Capturing the monetary value of these items is difficult. Information comes from many sources, and values are often derived indirectly. Ideally, labour compensation estimates should reflect employers' labour costs – not only the actual payments of wages and salaries and supplementary labour income, but also the monetary value of fringe benefits such as subsidized meals, uniforms and clothing; low cost loans and housing; discounts on merchandise; and athletic, recreational and daycare facilities. These data were collected by Statistics Canada's Labour Cost Survey until its cancellation in 1978. Currently, no other survey provides similar data.

Labour income estimates are the closest available approximation of labour costs. These estimates consist of total wages and salaries and supplementary labour income accruing to paid workers for services rendered. Paid workers are persons normally residing in Canada who receive a wage, salary or remuneration in kind, or who are working owners of incorporated businesses. Also included in the definition is the labour income of resident Canadians temporarily working abroad.

Wages and salaries include, in addition to basic pay, directors' fees, bonuses, commissions, tips and gratuities, taxable allowances and retroactive wages. The estimates are calculated on a "gross" basis, that is, before deductions for income tax, unemployment insurance premiums, pension contributions, and so on.

Supplementary labour income comprises payments made by employers for future and contingency benefits of their employees. The payments include employers' contributions to health and welfare schemes, pension plans, workers' compensation and unemployment insurance funds.

Excluded from labour income is the monetary value of fringe benefits such as subsidized meals, merchandise, loans, housing, recreational and daycare facilities. Incomes and allowances of non-resident Canadians are also excluded from the labour income estimates, as are Canadian Armed Forces pay and allowances. Earnings received by independent professionals, proprietors of unincorporated businesses, or farmers are not part of labour income. Furthermore, workers' compensation, unemployment insurance, and pensions are not considered labour income.

Labour income estimates are projected from Revenue Canada benchmarks using data from many sources, some of which are, at best, only poor proxies.

Because the estimates are not derived from a survey, it is difficult to provide any measure of reliability. The estimates are revised annually as new benchmarks become available. (For details, see *Estimates of Labour Income*.)

Average annual labour income

Aggregate labour income conveys little information about the income of an individual worker. Fluctuations in total labour income reflect changes in both employment and compensation levels. Average income, however, provides a good, although imperfect, measure of the compensation received by a worker. It is the total annual labour income divided by an average annual number of paid workers.

Average income estimates in this article are calculated using data series published in *Estimates of Labour Income* and *The Labour Force*.

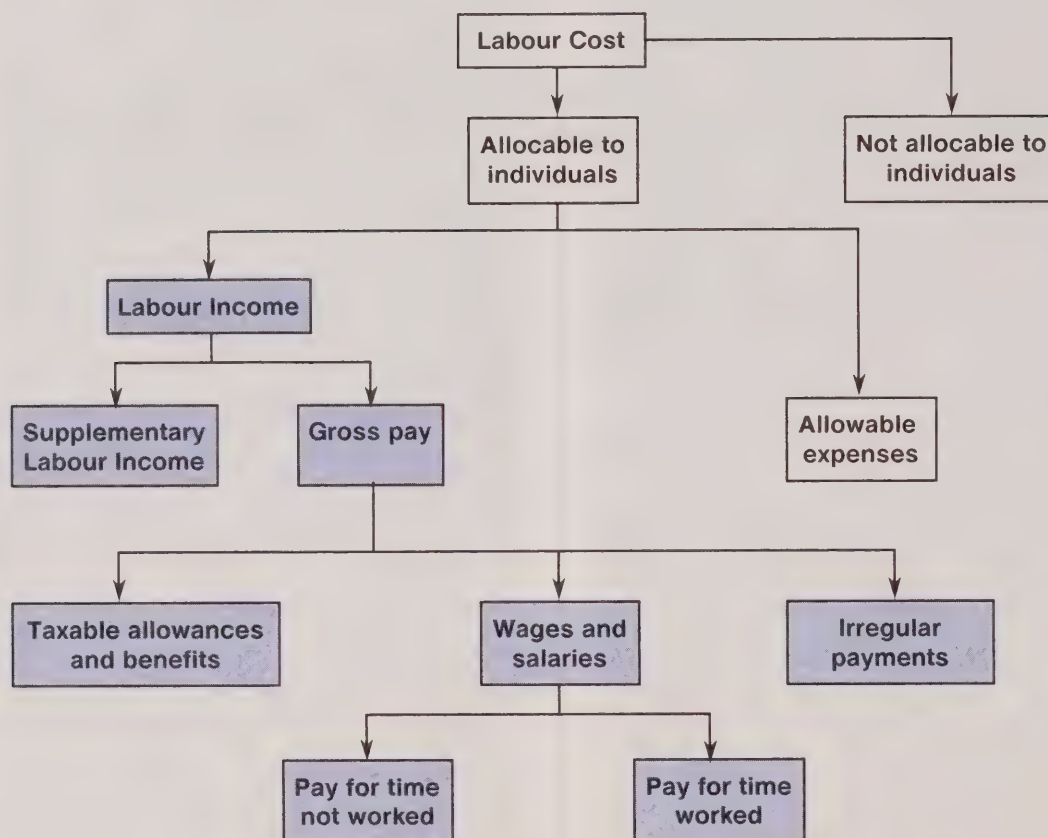
These estimates offer not only estimates of wages and salaries but also supplementary labour income. Wage and salary estimates could be derived from other sources such as the Survey of Consumer Finances (SCF) and the Survey of Employment, Payrolls, and Hours (SEPH). Missing from the SCF and SEPH estimates, however, is the supplementary labour income component. Moreover, SEPH estimates do not cover all industries.

Factors affecting average income

Many factors affect the average income figures of paid workers. These factors can be divided into two groups: those that influence an individual worker's labour income and those that do not. Factors such as the rate of labour compensation, the number of hours worked, job tenure, overtime, and labour statutes affect an individual worker's labour income. For example, changes in labour statutes dealing with minimum wage and overtime regulations can affect the labour income of individual workers. A change in legislation may extend coverage of various subcomponents of supplementary labour income to new groups of workers or increase supplementary labour income contributions made on behalf of existing workers.

Factors that do not affect an individual worker's labour income, but which may affect average labour income, concern the distributional aspects of employment in the labour market. They include industrial, occupational, and provincial distributions of paid workers, and shifts in the proportion of part-time and full-time workers or persons holding more than one job. If, for example, substantial employment growth were to occur in low wage industries, then average labour income would decline but an individual worker's labour income might remain constant (assuming no job change). Similar effects would be observed if employment growth in part-time jobs was proportionally greater than in full-time jobs.

Terminology of Labour Cost



concepts.) This represents an increase of 158% since 1975. But adjusting these figures by the Consumer Price Index (CPI) to remove the effects of inflation reveals a different picture.² (Unless otherwise stated, all income figures or comparisons hereafter are in 1988 dollars.) Average labour income in 1988 was actually 1.6% (\$485) below the 1977 peak. This decline can be attributed to wages and salaries, which comprise about 90% of labour income. Between 1977 and 1988, average annual wages and salaries dropped by 3.3% (almost \$1,000).

From 1978 to 1983, wages and salaries declined every year, losing a total of 6.7% by 1983. The largest annual decrease

(-3.1%) occurred in 1978, possibly reflecting the impact of the 1975 federal wage and price control program. The 1981-82 recession also had a strong, but delayed, effect on wages and salaries – they declined by 1.4% in 1983. From 1984 to 1988, the trend reversed, as wages and salaries recorded a cumulative gain of 3.6%.

In contrast, supplementary labour income continued to grow throughout most of the 1977-1988 period, offsetting about one-half of the wage and salary decline. But, despite the 17% jump in this component between 1977 and 1988, its share of total labour income increased minimally, from 8.3% to 9.9%.

Table 1
Labour income per employee by industry in 1988 constant dollars

	1977			1988		
	Labour income	Wages & salaries	Supplementary labour income	Labour income	Wages & salaries	Supplementary labour income
	\$					
All industries	30,453	27,916	2,537	29,969	26,999	2,970
Goods-producing sector	33,519	30,705	2,814	34,141	30,445	3,695
Agriculture, fishing and trapping	14,017	13,663	354	14,666	14,033	633
Forestry	42,019	38,354	3,665	42,439	37,180	5,259
Mining	42,727	38,482	4,245	45,632	40,724	4,908
Manufacturing	31,659	28,711	2,948	33,887	29,963	3,925
Construction	42,030	39,505	2,525	36,472	33,193	3,279
Services-producing sector	29,192	26,772	2,420	28,510	25,808	2,701
Transportation, communication and other utilities	36,170	32,390	3,780	37,667	33,299	4,368
Trade	23,775	22,283	1,492	22,328	20,518	1,810
Finance, insurance, and real estate	32,417	30,486	1,931	39,934	37,234	2,700
Community, business and personal service	28,744	26,361	2,383	26,602	24,208	2,394
Public administration	32,166	28,785	3,380	32,754	28,270	4,483

Sources: Labour Force Survey and Estimates of Labour Income

Changes by industry uneven

Between 1977 and 1988, average labour income increased in the goods-producing sector but declined in the services-producing sector. Both sectors, however, experienced declines in wages and salaries and growth in supplementary labour income. The increase in the goods-producing sector resulted from the substantial growth of the supplementary labour income component (\$881), more than compensating for the slight loss in the wages and salaries (-\$260). The labour income loss in the services-producing sector resulted from the large decline in wages and salaries (-\$963), surpassing the modest supplementary labour income growth (\$281).

Several factors may account for the different patterns in the two sectors: the higher rate of unionization, the preponderance of adult men, and the slower employment growth in the goods-producing

sector, versus the high levels of youth and female employment and the higher rate of part-time employment in the services-producing sector. (For a discussion of some of these factors, see Dumas, Lévesque, and Picot, et al.)

Incomes grew in most goods-producing industries...

The income gains in manufacturing occurred mainly after the 1981-82 recession, reflecting the large productivity gains since 1982. The extraordinary growth in supplementary labour income for workers in agriculture and fishing (78.9%) may be due to the extension of workers' compensation and unemployment insurance coverage to more of these workers.

Within the goods-producing sector, only the construction industry experienced a decline in average labour income (-13.2%). The increase in supplementary labour

income could not completely offset a substantial loss in wages and salaries. Growth in non-union construction activity and a weakening of closed-shop provisions on many construction sites may have kept wage and salary increases below the rate of inflation.

Throughout the 1975-1988 period, mining and forestry workers maintained the highest average labour incomes in the goods-producing sector (\$45,600 and \$42,400 respectively in 1988). Workers in agriculture and fishing were consistently the lowest paid (\$14,700 in 1988).

... but declined in the larger services-producing industries

For the service sector as a whole, labour income averaged almost one-fifth less than the goods-producing sector. The large numbers of part-time and temporary workers in the service sector have doubtless exerted considerable downward pressure on both components of labour income. Part-time employees working less than a minimum number of hours per week are excluded from unemployment insurance coverage. As well, most part-timers and nearly all temporary workers are not included in private pension plans. In some service-sector industries, workers receive a significant portion of their earnings as tips and gratuities (for example, those in the food and beverage service industries). Two factors may combine to depress the reported earnings for these workers: their wages are usually lower because they are expected to receive tips and gratuities, and the amounts received in this form are likely underestimated.

Average annual labour income declined in community, business and personal services and in trade, but increased for the other three industry groups. In fact, the finance, insurance and real estate industries had the largest increase of any major industry group – 23.2%. The booming

real estate and financial markets in the 1980s no doubt contributed to the increased earnings for workers in this industry. The other high-income industry group – transportation, communication and other utilities – likely benefited from relatively large proportions of high-technology and unionized workers.

Although belt-tightening by all levels of government restrained earnings increases, workers in public administration continued to enjoy high levels of supplementary labour income.

Provincial differences were also significant

The Canadian economy actually comprises several regional economies. One obvious perspective is provincial. The analysis of constant-dollar labour income is, however, constrained by the lack of provincial CPIs prior to 1979. At the national level, labour income peaked in 1977, but given differing provincial economies, the provincial peaks may have occurred either earlier or later.

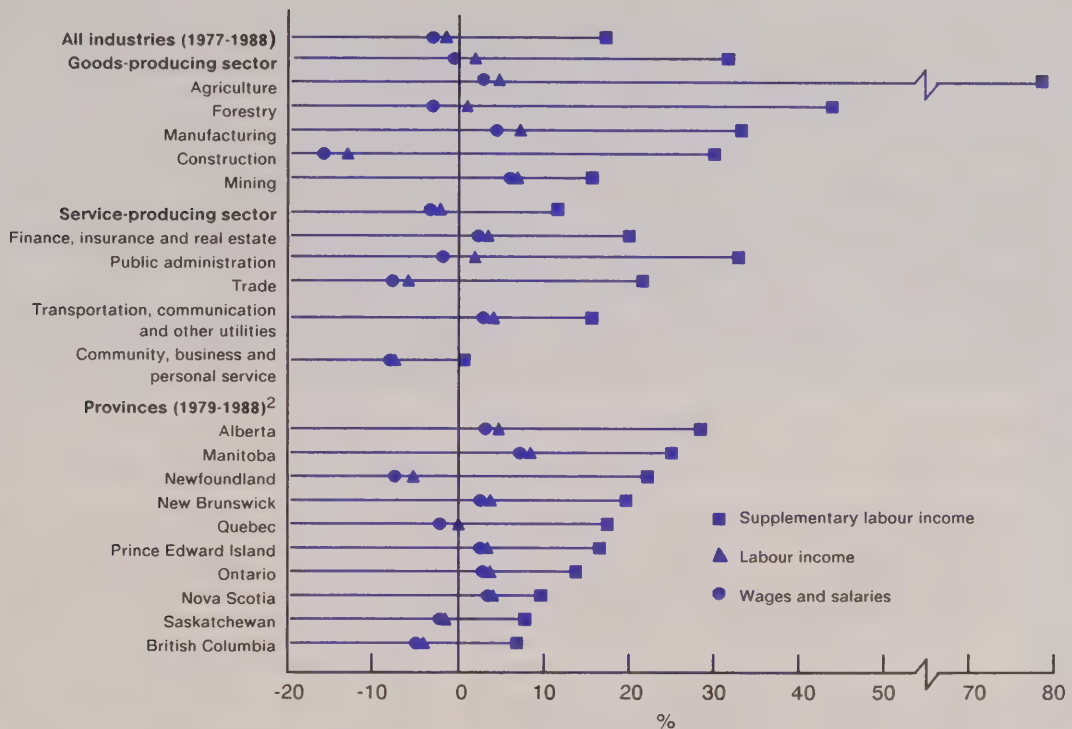
Between 1979 and 1988, average labour income fell significantly in only two provinces: Newfoundland (5.4%) and British Columbia (4.0%). During the same period, supplementary labour income grew substantially in most provinces, with Quebec maintaining its leading position. The relatively high share of supplementary labour income in Quebec (12.4% in 1988) resulted partly from increases in the hospital insurance payroll tax on all employers, and partly from the introduction and growth of the public service employees pension plan.

Conclusion

Labour costs are often one of the largest expenses incurred by employers. For more than a decade, average wage and salary increases have almost paralleled general

Percentage change in real¹ labour income

Supplementary labour income growth between 1977 and 1988 offset about half of the wage and salary decline.



Sources: Labour Force Survey and Estimates of Labour Income

¹ Labour income adjusted by the CPI (1988 = 100).

² Provincial CPIs not available for years preceding 1979.

price increases. During the same period, however, supplementary labour income has risen considerably faster than the CPI. And it appears this trend will continue because of various legislative changes.

For example, Alberta, New Brunswick, Nova Scotia, Quebec, Ontario and the federal government have amended their pension acts to increase the coverage among workers and to raise the levels of future benefits. Pensions will be locked-in and vested after two years (five years in Alberta), with at least 50% of the accrued benefit provided through employer contributions.

As well, the incidence of pension indexing will probably continue to expand. Several unions in the automotive, forestry and transportation industries have recently negotiated partial indexing of pension benefits. As well, the revised Ontario Pension Benefits Act, which covers about half the pension plans in Canada, calls for mandatory indexing.³

Legislation at the federal level and in Alberta, Manitoba, New Brunswick, Nova Scotia, Quebec, and Ontario requires mandatory participation of all full-time employees, and voluntary participation for

Table 2
Provincial labour income per employee in 1988 constant dollars

	1979			1988		
	Labour income	Wages & salaries	Supplementary labour income	Labour income	Wages & salaries	Supplementary labour income
	\$					
Newfoundland	26,231	24,409	1,822	24,822	22,595	2,227
Prince Edward Island	20,544	19,025	1,519	21,236	19,469	1,767
Nova Scotia	23,588	21,608	1,980	24,537	22,370	2,167
New Brunswick	23,655	21,772	1,883	24,551	22,302	2,249
Quebec	29,953	26,800	3,153	29,929	26,227	3,702
Ontario	31,014	28,366	2,649	32,130	29,123	3,007
Manitoba	25,418	23,564	1,855	27,546	25,230	2,316
Saskatchewan	25,213	23,316	1,897	24,822	22,781	2,041
Alberta	27,591	25,721	1,870	28,892	26,492	2,400
British Columbia	30,323	27,794	2,529	29,108	26,408	2,700

Sources: *Labour Force Survey and Estimates of Labour Income*

part-time workers, in an employer's pension plan, if one exists. In addition, the combined employer/employee contribution rate under the Canada Pension Plan has been rising every year since 1986, and will reach 4.6% in 1991. From 1992 until 2011, the contribution rate will increase more slowly, reaching 7.6% in 2011.

Another significant increase in supplementary labour income has been introduced in Ontario with the new payroll tax for funding the Ontario Health Insurance Plan. A rough estimate, based on

the Quebec and Manitoba experiences, suggests an increase of about 10% in supplementary labour income for Ontario in 1990 (and perhaps 2% nationally).

These costs, plus expected changes in other fringe benefits (such as paid vacations, parental leave and childcare) will increase employers' non-wage labour costs in the future. At the same time, employers may also face pressure to increase wages and salaries in response to a tightening labour market due to the shifting age-structure of the Canadian population. □



PERSPECTIVES

ON LABOUR AND INCOME

Supplement

Autumn 1990

The Labour Market: Mid-year Report

H I G H L I G H T S

- For the first time since 1982, the participation rate for persons aged 15-24 seems to have entered a period of decline. Since the 1982 recession, increases in the participation rate for young people have moderated the effect on the labour force of this group's declining population (a drop of 0.8 million in just over nine years).
- Although the labour force continued to grow during the first six months of the year, the year-over-year rate (1.3%) was smaller than in the past years (1.7% in 1989 and 2.1% in 1988).
- Growth in employment mirrored the changes in the labour force in the first half of the year with a rate of 1.4% compared with 2.0% in 1989 and 3.2% in 1988. Employment among women aged 25 years and over accounted for most of the increase.
- By industry, employment in the goods sector in June 1990 was down to the levels of late 1987. Manufacturing has been the big loser in this group, employment having declined for over a year. In contrast, employment growth continues in the service-producing group with virtually all recent increases coming in the community, business and personal service industry.
- The level of unemployment has been quite stable for the first six months of the year. In March 1990, it hit its lowest point since August 1981 (975,000), but climbed back over the one million mark in May. The biggest drop in unemployment has been among women aged 25 years and over.
- Likewise, no clear trend has been established for the unemployment rate in the first half of the year. Since early 1988, it has fluctuated between 7.5% and 8.0%. In March of this year, it dropped to 7.2% but in May it was up to 7.6%. In June, the unemployment rate declined slightly to 7.5%.

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The labour market: Mid-year report

Henry Pold

The economy began 1990 on a pessimistic note. Most of the major indicators of economic activity pointed toward continued sluggishness. Real gross domestic product increased only slightly in the first quarter, housing starts declined, and retail sales (especially automobiles) were down, while interest rates remained high. The rate of increase in the consumer price index, meanwhile, held steady at around 5%.

Labour market indicators, however, provided mixed messages during the first six months of 1990. The help-wanted index continued the decline begun in 1989. The unemployment rate fluctuated between 7.2% and 7.8%, but in June the rate (7.5%) was virtually unchanged from the fourth quarter of 1989. On the other hand, employment increased modestly through the first six months of the year and by June the level was almost 70,000 higher than in December 1989 (and more than 100,000 higher than in June 1989).

Participation rates

Two long-term trends persisted into the first half of 1990. The proportion of men aged 25 and over in the labour force (that is, those

This article is based on information available as of July 6, 1990. All monthly data have been seasonally adjusted to provide a better picture of underlying trends. Seasonal movements are those caused by regular annual events such as climate, holidays, vacation periods, and cycles related to crops and production. Seasonally adjusted series still contain irregular and longer-term cyclical fluctuations.

either working or looking for work) continued to drift downward, whereas women in this age group increased their representation. The declining participation rate for men has been caused almost entirely by men aged 55 and older – their participation rate has dropped from about 50% in 1975 to less than 40% in the first half of this year. The dramatic growth in the participation rate for women has been due to the 25-54 age group, where the rate has climbed from just under 70% in 1975 to almost 80% this year. (The rate for women aged 55 and over has held steady at about 18%.)

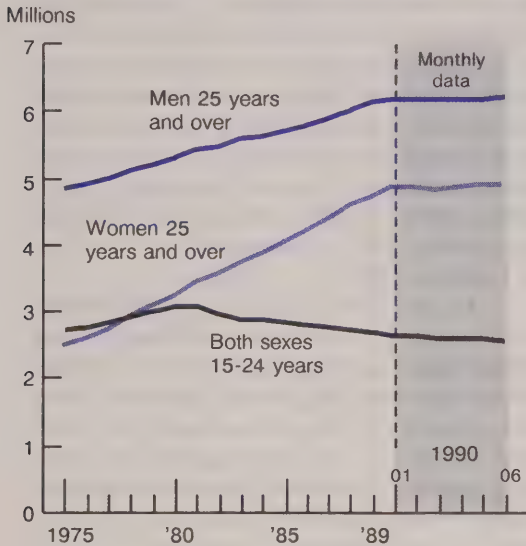
This year, for the first time since 1982, the participation rate for persons 15-24 seems to have entered a period of decline. The more-or-less continuous increase in the participation rate for young people since the 1981-82 recession has moderated the effect on the labour force of the declining population in this age group. (The estimated population aged 15-24 shrank from 4.6 million in March 1981 to 3.7 million in June 1990.) This decline in the size of the traditional pool of entry-level workers,

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Main labour market indicators

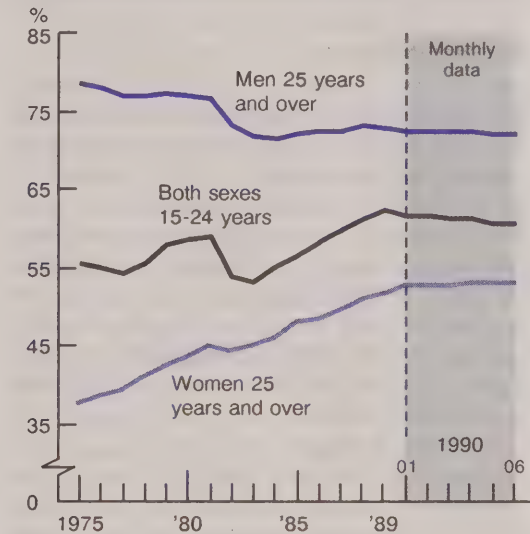
Labour force

The strongest growth in the labour force has been among women 25 years of age and over.



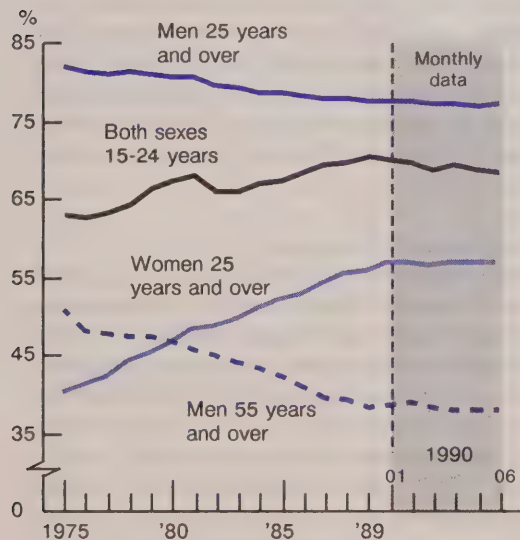
Employment/population ratios

The proportion of persons 15-24 years of age with jobs has been declining in the first six months of 1990.



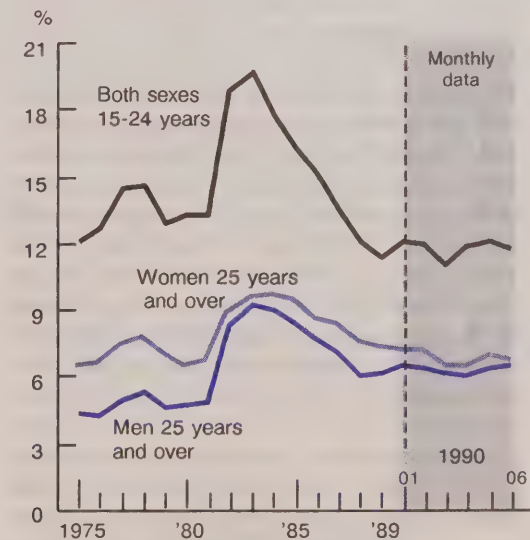
Participation rates

Less than 40% of men 55 years of age and over are now active in the labour force.



Unemployment rates

The unemployment rate for men 25 years of age and over remains above the levels prior to the 1981-82 recession.



Source: Labour Force Survey

Note: Monthly data are seasonally adjusted.

together with the exodus of older male workers and the influx of women, will undoubtedly continue to affect the composition of the labour market in coming years.

Labour force

During the first six months of this year, the labour force grew at a slower year-over-year rate (1.3%) than in the past two years (1.7% in 1989 and 2.1% in 1988). The decline in the number of 15-24 year-olds in the labour force continued – their level dropped to 2.6 million in June 1990, compared with an average 2.7 million in 1989 and a peak level of over 3 million in 1981. The strongest growth again came from women 25 and over, up 4.0% from the first half of 1989.

Most of the growth in the labour force occurred in January and February. Then between February and March, the labour force experienced its largest percentage decline since 1975. Although a large portion of the decline was regained in subsequent months, the June level remained below the peak reached in February.

Employment

Employment changes in the first six months of 1990 mirrored the changes in the labour force. In the first half of 1990, employment increased about 1.4% over the same period in 1989, compared with annual growth rates of 2.0% for 1989 and 3.2% for 1988. Employment growth among women 25 and over continued to set the pace. Employment for this group has almost doubled since 1975, and its share of the total has expanded from one-quarter in 1975 to more than one-third in 1990.

The drop in the employment level for young people continued its downward trend of more than a year. In June, employment among persons aged 15-24 reached its lowest level since April 1983. In the first half of 1990, 15-24 year-olds comprised less than a

fifth of total employment compared with more than a quarter in 1975. (Employment for this group, however, has declined more slowly than its population, reflecting its increased employment/population ratio.)

After showing some weakness in the fourth quarter of 1989, employment among men 25 and over expanded in the first half of 1990. Since 1975, employment for this group has increased by about one-quarter, but their share of the total has drifted down from about 50% in 1975 to around 46% in the first six months of 1990.

In the first half of 1990, part-time employment grew at a much more rapid rate (2.0%) than in 1989 (0.3%), but still well below the very strong growth of 1988 (4.3%). Full-time employment increased by only 1.3% in the first six months of 1990 compared with the same period a year ago, a much slower growth rate than in the previous six years.

Since 1975, full-time employment has increased by about 30%, from 8.3 million to 10.7 million in the first half of 1990. Over the same period, part-time employment nearly doubled, going from an average of almost one million to 1.9 million. The increase in part-time employment may moreover be somewhat understated because of the large growth in multiple job holders (from 212,000 in 1975 to 626,000 in June of this year).¹

Employment by industry

Where has the recent growth in employment taken place? After slight increases in January and February, employment in the goods-producing sector continued the decline begun in the last quarter of 1989. By June of this year, employment in the goods sector was down to the levels of late 1987. At the same time, the service-producing sector continued to grow – the April increase in this sector (74,000) was the largest in five years.

Within each sector, though, there was considerable variation among the sub-

components. After declining in 1989, agricultural employment held steady in the first months of 1990. Employment in the other primary industries has been basically unchanged for some time, while construction employment has shown moderate growth. The big loser in the goods sector has been manufacturing. Employment in this industry has been declining for over a year, and by June of this year it stood at almost the same level as at the beginning of 1987. The drop in manufacturing employment has been shared by most of the major groups in the industry.

Even within the service sector, a number of industries have shown only slight growth. Employment levels in public administration and in transportation, communications and other utilities have remained generally stable for some months. In trade and in finance, insurance and real estate, employment showed modest growth over the past winter, but the levels in both industries have also flattened in recent months. Thus, virtually all of the recent employment increases have come from the community, business and personal service industry, which has in fact been growing almost continuously for several years.

However, simply attributing employment growth to such a large agglomeration can be somewhat misleading – the community, business and personal service industry accounts for more than one-third of total employment and comprises some quite distinct subgroups. The employment increases have been in education, health and welfare organizations, services to business management, and accommodation and food services. The weakest components have been amusement and recreation services and personal services, both of which have had employment declines recently.

Employment by province

Although employment levels increased in all provinces in 1989 except Saskatchewan, the

growth rates in most provinces were lower than in 1988. The first half of 1990 brought little improvement to the provincial employment picture.

Employment in Newfoundland has been drifting lower since January. New Brunswick, Quebec and Manitoba all began the year with relatively strong employment growth, although some slowdown appeared at the end of the second quarter. The trend in Ontario has been generally negative – by June, employment was down by almost 1% from December 1989. Employment in the remaining provinces showed little change.

Employment/population ratios

The employment/population ratio provides a useful measure of the status of the labour market.² In February 1981, the employment ratio reached its pre-recession peak – 60%. The ratio bottomed out at 56% late in 1982, and by the second quarter of 1987 it had recovered its pre-recession level. After that, it climbed to a new plateau of about 62%, where it has remained since August 1989.

As with the unemployment rate, the employment/population ratio for persons aged 15 to 24 shows more volatility than for those 25 and over. The employment ratio for 15-24 year-olds peaked at 60% in June 1981 and then plummeted to 51% in August 1982. After that, the ratio reached a new peak of 63% in August 1989 before dropping back to 61% in April 1990.

The employment ratio for men 25 and over has been on a downward trend for at least the last 15 years. From 78% in 1975, the ratio has drifted down to 72% in June 1990. Although most of the decline can be attributed to men 55 and over, some downward movement is also apparent for men aged 25-54.

The employment/population ratio for women 25 and over reacted only slightly to the 1981-82 recession. From the pre-recession peak of 45% in the second and

third quarters of 1981, the ratio retreated to 44% in November 1982. Since then it has increased fairly steadily – by the first half of 1990 it averaged 53%.

Average weekly earnings

From 1984 to 1986, the annual growth rate of average weekly earnings for the industrial aggregate³ fell from 3.8% to 2.8%. This slowdown could be attributed to several factors: the faster growth in the generally lower-paying service industries; the re-hiring of laid-off workers (usually lower-seniority personnel with lower wage rates); the hiring of new (lower-paid) employees as the economy expanded; and reductions in overtime as more workers were added. By 1989, however, the growth rate for earnings had increased to 5.0%, and in January 1990 average weekly earnings (\$501) were 5.5% higher than a year earlier. But since then, the year-over-year rate of increase in the level of average weekly earnings slowed to 5.2% in April.⁴

Although employment in manufacturing has been falling, average weekly earnings in this industry in April were 5.5% higher than the same month in 1989. Part of the increase is probably due to the loss in employment – lower-seniority employees, with lower average earnings, are generally the first to be laid off.

The rate of increase in earnings varied considerably by industry. In April, public administration had the highest rate of increase (7.3% compared with 4.7% for 1989), while finance, insurance and real estate had the lowest (1.9% compared with 4.1% for 1989).

Unemployment

In March of this year, unemployment hit its lowest point since August 1981 – 975,000. By May, however, the level had bounced back over the one million mark. The level

among 15-24 year-olds has been relatively stable for over a year at about 300,000. For men 25 and over, the level of unemployment has fluctuated between 350,000 and 400,000 for two and a half years.

Among women 25 and over unemployment decreased fairly steadily from its recessionary peak, reflecting the increased employment level for this group. The number of unemployed women 25 and over in April 1990 (309,000) was the lowest since April 1982. But in May, unemployment among women 25 and over jumped by nine percent to 337,000 – still slightly below the average for 1989.

Help-wanted index

In June, the national help-wanted index hit 120, its lowest level in three years. This was down more than 20% from the peak reached in March and April 1989 (157). The index has generally been negatively correlated with the unemployment rate.⁵ That is, as the index decreases, the unemployment rate increases, and vice versa. The timing of turning points in the two is normally not concurrent – the help-wanted index usually starts to decline several months before the unemployment rate starts to increase. The current year-long decline in the index, however, has been a longer than average lead with no significant change in the unemployment rate.

Unemployment rates

After hitting its recession-induced peak of 12.8% in December 1982, the unemployment rate declined until the first quarter of 1988. It then fluctuated between 7.5% and 8.0% until March of this year, when it dropped to 7.2%. Although the rate remained at 7.2% in April, it jumped back to 7.6% in May and settled at 7.5% in June.

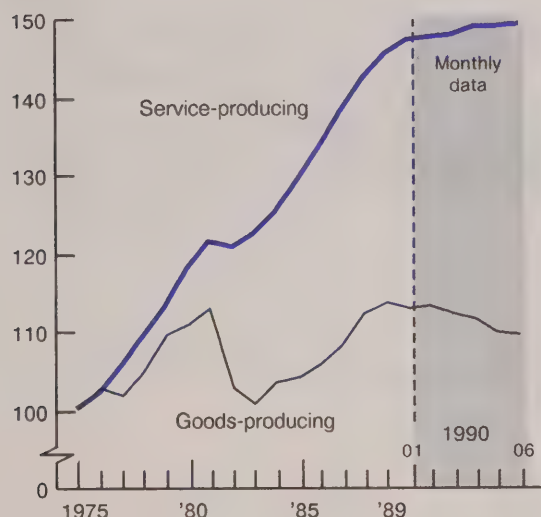
Because of their low job seniority, 15-24 year-olds are usually more severely

Employment and earnings changes

Employment changes

Employment growth in service industries continued into 1990.

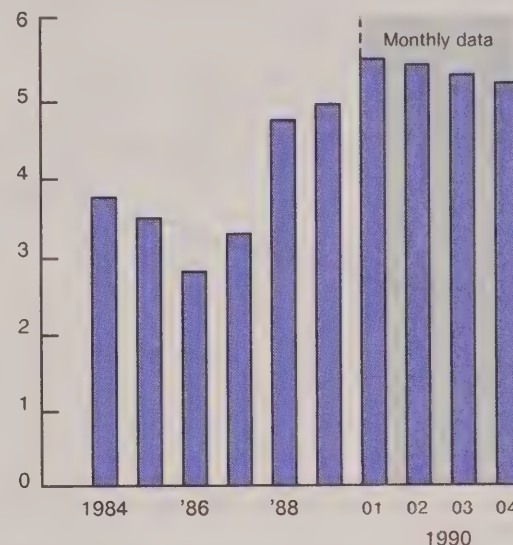
1975 = 100



Average weekly earnings

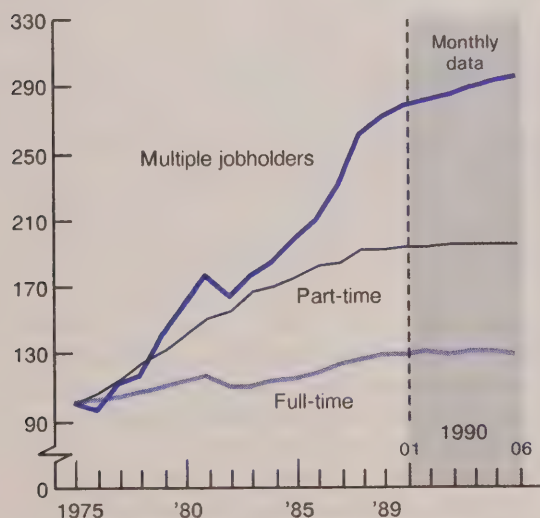
The rate of increase in earnings decelerated at the beginning of 1990.

% annual rate of increase

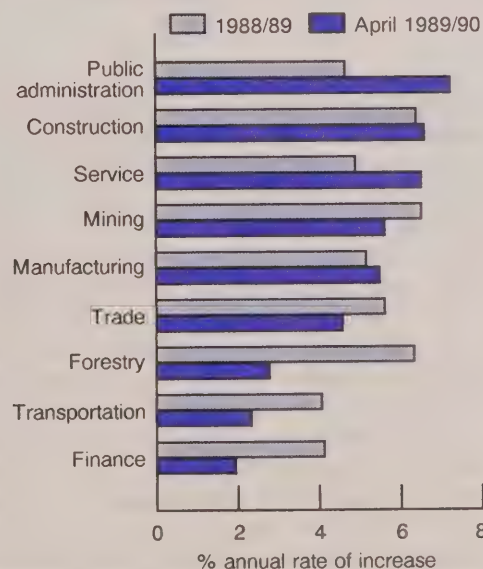


Moonlighting has almost tripled since 1975.

1975 = 100



The rate of increase in earnings was lower in five of nine industries.



Source: Labour Force Survey

Note: Monthly data are seasonally adjusted.

Source: Survey of Employment, Payrolls and Hours

Note: Monthly data are seasonally adjusted.

Employment in two major industries

In June 1990, employment in manufacturing was only 6% higher than in 1975, while it was more than 70% higher in services.



Source: Labour Force Survey

Note: Seasonally adjusted monthly data.

affected by economic downturns. The unemployment rate for this age group peaked at 21.3% in June of 1982, six months before the economic trough. After working its way down to a low of 10.6% in March 1989, the rate has been creeping upward once again and stood at 11.7% in June 1990.

For persons 25 and over, the peak unemployment rates – 10.3% for men and 10.2% for women – were less than half that for younger workers and occurred slightly later, in December 1982. For men 25 and over, the unemployment rate has floated in the 6% range from 1988 through the first half of 1990. The rate for women 25 and over declined gradually after the 1981-82 recession to a low of 6.4% in April 1990. Since then, it has edged up to 6.7% in June.

Conclusion

Many economic forecasters are predicting further slowdowns in the economy in the near future. Indeed, it can be argued that large segments of the economy (for example, manufacturing and trade) may already be in a recession. But today's economy is so dominated by the service sector, traditionally less affected by downturns, that the overall slowdown may have a less severe impact on employment levels than in the past. Nevertheless, given the lengthy decline in the help-wanted index and other indicators of a weak economy, instability in the labour market may well continue into the second half of 1990. □

Notes

¹ The Labour Force Survey counts people, not jobs; persons with two (or more) jobs whose combined weekly hours total 30 or more are classified as being employed full-time.

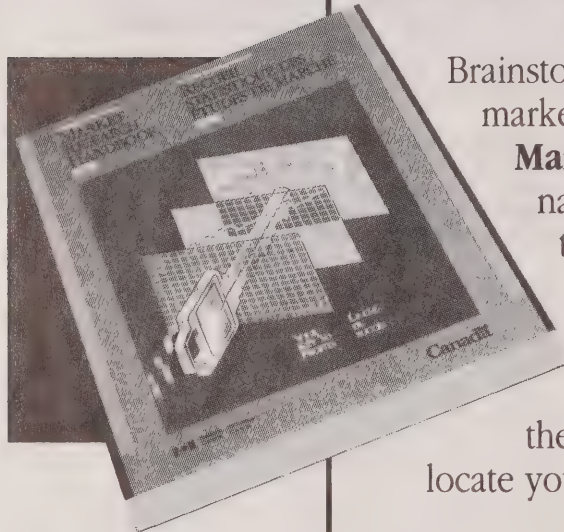
² The employment/population ratio shows the proportion of the population employed during the Labour Force Survey reference week.

³ Average weekly earnings data are from the Survey of Employment, Payrolls and Hours. The industrial aggregate includes all industries except agriculture, fishing and trapping, religion, private households, and the armed forces.

⁴ The data in this section are based on trend-cycle estimates of average weekly earnings, which were calculated for this article with the microcomputer version of Statistics Canada's X-11 ARIMA seasonal adjustment program using data from the Survey of Employment, Payrolls and Hours.

⁵ For an analysis of the relationship between the help-wanted index and the unemployment rate (and other labour market variables), please see "Job Ads: A Leading Indicator?" in the Autumn 1989 issue of *Perspectives on Labour and Income*.

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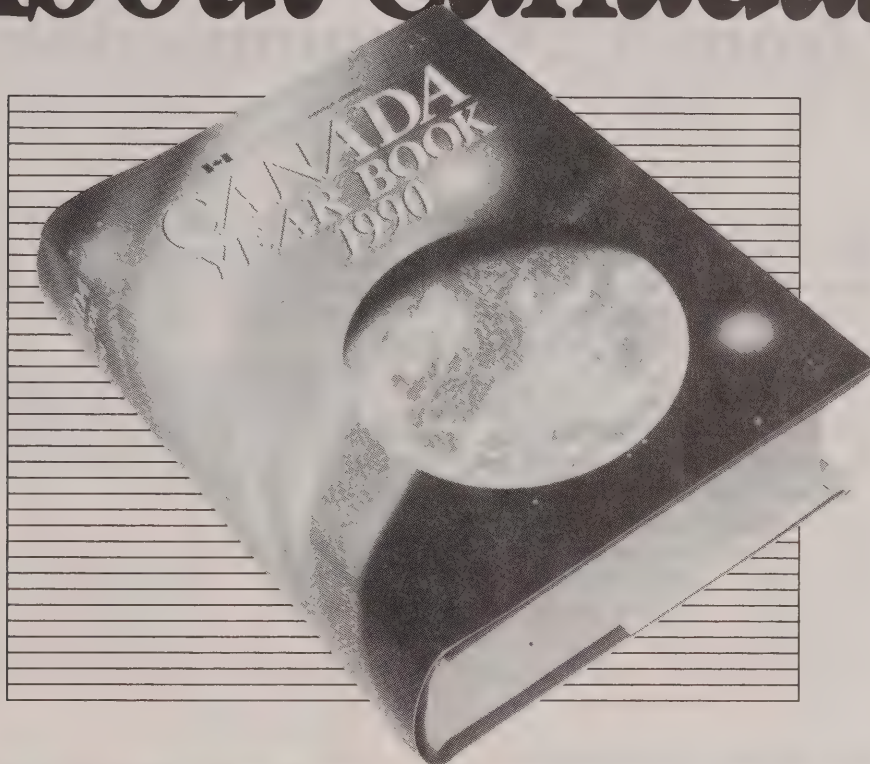
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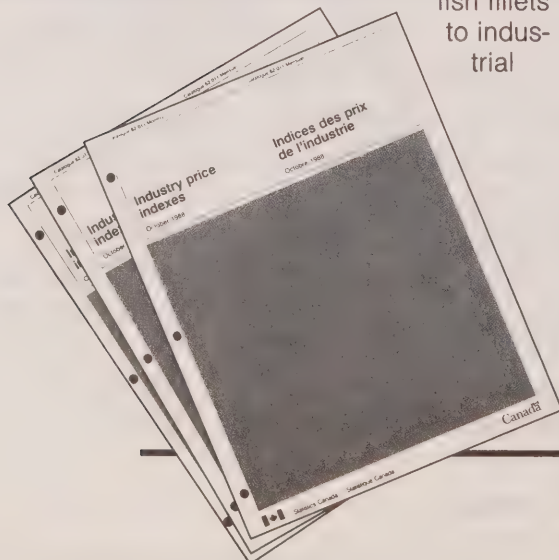
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Notes

¹ The employment estimates in the analysis are available only from 1975 onward. To construct a longer time series would require a linkage between the current LFS and its predecessor.

² This article uses the CPI because it is widely known and commonly used to adjust income. Other measures of

price changes are also available; for example, the consumer expenditure implicit price index from the income and expenditure accounts, and the overall gross domestic product implicit price index.

³ At the time of writing, the indexing formula and the effective date had yet to be announced.

References

Dumas, C. "Occupational Trends Among Women in Canada: 1976 to 1986." *The Labour Force*, monthly, Catalogue 71-001, October 1986. Ottawa: Statistics Canada, pp. 85-127.

Lévesque, J.-M. "The Growth of Part-Time Work in a Changing Industrial Environment." *The Labour Force*, monthly, Catalogue 71-001, May 1987. Ottawa: Statistics Canada, pp. 87-107.

Picot, G. et al. "The Changing Wage Distribution of Jobs, 1981-1986." *Canadian Economic Observer*, monthly, Catalogue 11-010, November 1988. Ottawa: Statistics Canada, pp. 4.1-4.33.

Turvey, R. *Observations on Canadian Wage and Salary Statistics*. Ottawa: Statistics Canada, April 1990. Unpublished Study.

Government transfer payments and family income

Abdul Rashid

The income security system in Canada consists of federal, provincial and municipal programs whose main objective is "the provision of direct financial benefits to individuals and families in Canada". The system is both comprehensive and diversified and has evolved over several decades. It includes programs covering cash benefits for children, senior citizens, unemployed workers, retired or disabled workers, and persons in need.¹ These programs can be classified into four groups:

Demogrant programs provide cash benefits to all Canadians of given demographic characteristic(s). The Family Allowances, Old Age Security and Veterans' and Civilians' Disability Pensions are examples.

Social Insurance programs pay benefits out of funds to which a specified group of persons has contributed. The Canada and Quebec Pension Plans, provincial workers' compensation programs and Unemployment Insurance are examples.

Income-tested programs generally provide graduated benefits to those whose incomes are below a specified qualifying level. The Child Tax Credit, Guaranteed Income Supplement, War Veterans' Allowances and a variety of provincial income supplements and refundable tax credits are examples.

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Needs-tested programs, specifically provincial social assistance programs that are cost-shared between the federal and provincial governments under the Canada Assistance Plan, provide benefits to individuals and families on the basis of a budget deficit test. These programs take into account the beneficiaries' needs, income and other resources.

In addition to these direct money transfer payments, there are several programs that provide assistance in the form of subsidies, exemptions and rebates. The income tax system allows certain deductions before the calculation of taxable income and provides for non-refundable tax credits.

This article examines the incidence and distribution of government transfer payments among families and the composition of their income in 1970 and 1985. Particular attention is paid to the families in the lowest income decile, that is, families that make up the bottom tenth of the income scale². The data presented are from the 1971 and 1986 Censuses of Canada.

Incidence of government transfer payments

In 1985, while nearly nine out of ten families reported income from employment, eight out of ten families reported income from government transfer payments. This high incidence of transfer payments reflects the universality of family allowances (54%

Notes and definitions³

A *census family* consists of a married couple (with or without never-married children) or a lone parent with one or more never-married children.⁴ The analysis in this paper covers all census families but excludes persons who are living alone or who do not form part of census families.⁵

Family income consists of money income received by all family members 15 years and over during a calendar year from wages and salaries (before deductions for taxes, social security contributions, etc.), net income from farm and non-farm self-employment, investment income, government transfer payments, private pensions and other money income.⁶

Government transfer payments consist of cash benefits received by individuals and families under various federal, provincial and municipal income security programs. Benefits in kind, such as subsidized housing and health care, are not included in government transfer payments in this paper.

of all families) and Old Age Security pensions (12% of all families). The second most common transfer payment (35% of all families) was child tax credits. Next, nearly one-quarter (23%) of all families reported receipt of unemployment insurance benefits in 1985.¹¹ About one-fifth of all families received other transfer payments, such as the provincial income supplements and social assistance. Transfer payments based on a recipient's income from other sources were concentrated in the lower income groups, while other transfer payments were found across all income levels.

There is a high concentration of families with Old Age Security pensions and Canada/Quebec Pension Plan benefits in the second and third deciles. These two deciles accounted for about 52% of all families with Old Age Security pensions. The payment of Guaranteed Income Supplement to elderly families with low incomes ensures their move out of the lowest decile.

Family allowances are received by all families with dependent children, but the incidence of child tax credits becomes insignificant as income increases. The low

Income deciles divide census families, arranged in order of their income size, into ten equal groups.

Data and their quality

The Canadian censuses collect, from a sample of households, information on various sources of income, such as employment income, investment income, government transfer payments, retirement pensions, etc.⁷ Census estimates from each of these sources are reconciled with similar data elsewhere, such as the national accounts, other surveys, taxation statistics, and other administrative data.⁸

On the whole, the estimates of employment income reconcile well with other data sources, as do the estimates of old age pensions, family allowances and child tax credits. Census data on unemployment insurance benefits, other government transfer payments and investment income are, however, weak, since there tends to be substantial under-reporting of these sources of income.⁹ These results are consistent with the results from other surveys both in Canada and elsewhere.¹⁰

incidence of both family allowances and child tax credits in the second decile is the result of the high concentration of elderly families without children in that decile.

While unemployment insurance benefits were more common among the middle income deciles,¹² two out of five families in the lowest two deciles received other (mostly income- and needs-tested) transfer payments in 1985.¹³

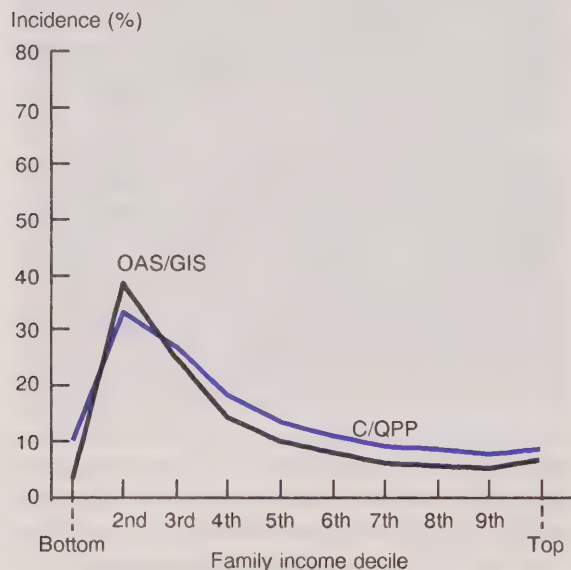
Distribution of government transfer payments

On the whole, families in the lowest decile received 10% of all government transfer payments, but the next three deciles received above-average shares of government transfer payments (Table 1). Beginning with families in the fifth decile, the share drops below 10% and continues to decrease for higher income families.

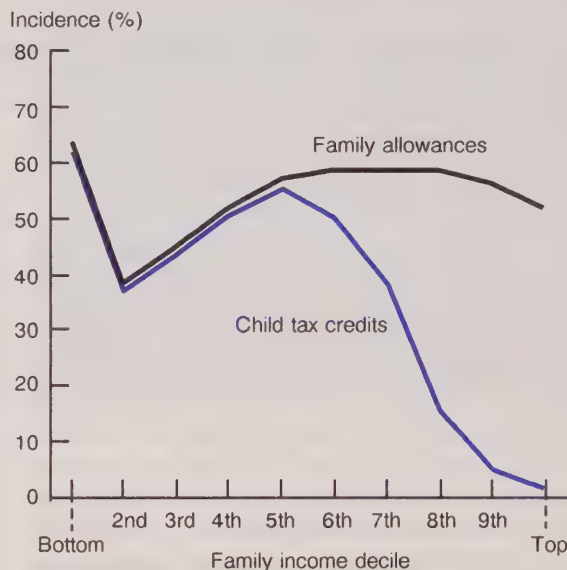
If all families received an equal amount from the various government transfer payments, the share of each decile would amount to 10%. In actual fact, there is substantial variation in these shares.

Incidence of government transfer payments among families, 1985

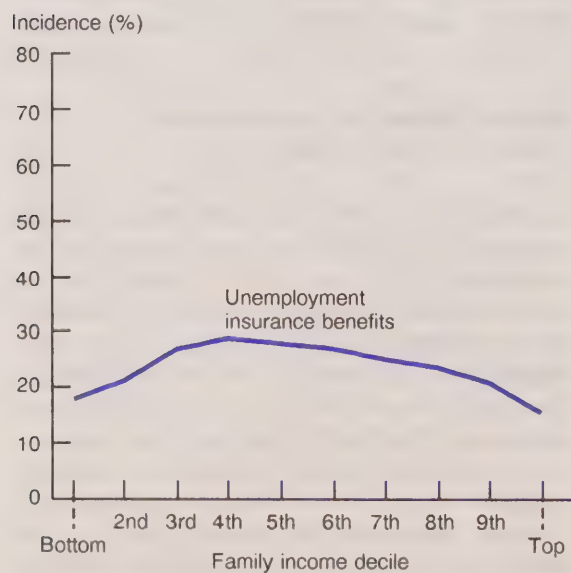
Most recipients of OAS and C/QPP are in the second and third deciles.



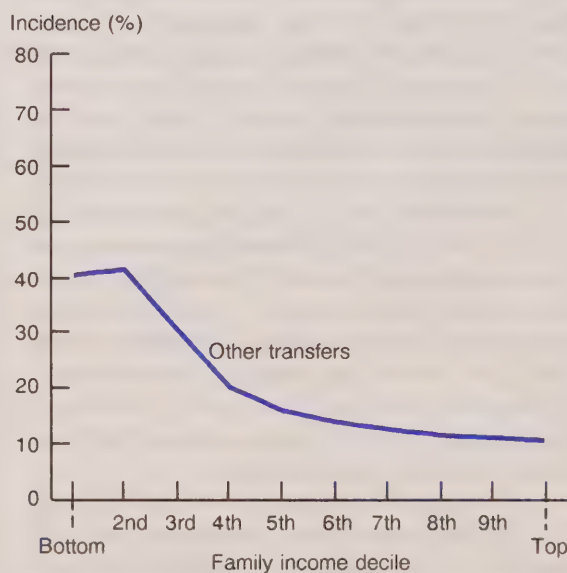
Unlike family allowances, child tax credits go mostly to low income families.



Unemployment insurance benefits spread across all income groups.



Other transfers (mostly social assistance) are concentrated in low income families.



Source: 1986 Census of Canada

Table 1
Distribution of government transfer payments by income deciles, census families, 1985

Income decile	Total	OAS/GIS	C/QPP benefits	Family allowances	Child tax credit	Unemployment Insurance benefits	Other
%							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bottom	10.0	2.6	4.6	10.7	19.0	5.9	24.1
2nd	20.7	41.6	19.2	7.3	12.6	9.6	19.5
3rd	15.6	20.0	20.1	8.4	14.6	13.0	14.5
4th	11.7	9.9	13.6	9.8	16.9	13.5	9.7
5th	9.6	6.6	9.9	10.8	16.6	12.3	7.2
6th	8.3	5.0	8.0	11.2	11.3	11.4	6.2
7th	7.0	3.9	6.6	11.2	5.9	10.2	5.3
8th	6.3	3.4	6.0	11.0	2.3	9.5	4.8
9th	5.7	3.1	5.6	10.2	0.7	8.4	4.6
Top	5.2	3.8	6.4	9.4	0.2	6.2	4.1

Source: 1986 Census of Canada

Families in the second and third deciles accounted for 52% of all families with Old Age Security pensions. They received about 62% of all income from these pensions. These two deciles also received 39% of the aggregate Canada/Quebec Pension Plan benefits. Since many of the recipients of these benefits are also likely to receive investment income from savings accumulated during their working life, work-related pensions and Old Age Security pension, the shares of upper deciles are not insignificant.

While most deciles received a more or less proportionate share of family allowances in 1985, the lower income deciles received a much larger share of the total amount of child tax credits. The middle income deciles received above-average shares of unemployment insurance benefits. Finally, a quarter of all income from other government transfer payments went to the families in the lowest decile.

The lowest decile contains a large number of young lone-parent families with young children and very few elderly families. The families in this decile received family allowances, child tax credits and other (mostly social) assistance but their

share of old age pensions and unemployment insurance benefits was very small compared with the families in the next few deciles. The average payments for family allowances and child tax credits are much smaller than those for unemployment insurance benefits and government old age pensions. Consequently, the share of the bottom decile in total government transfer payments was less than the second, third and fourth deciles.

Impact of government transfer payments

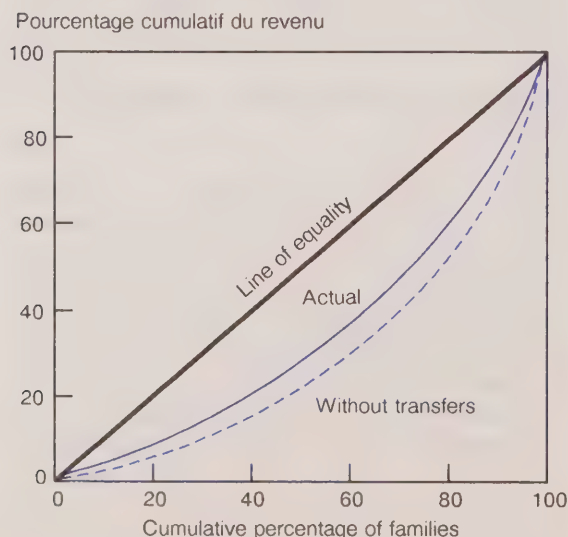
The impact of government transfer payments is two-fold: they augment family income and they reduce income inequality. Although these payments added to the income of about 80% of all families in 1985, the addition was much more important in the case of low income families. In 1985, census families received an average amount of \$3,600 in government transfer payments, accounting for about 10% of the average income of all families. Although the average amount of transfer payments received by census families in the lowest decile was about the same, it accounted for nearly two-thirds of their total income. The average

income of the families in the lowest decile (\$5,650) was 15% of the overall average family income (\$37,827) in 1985. Without government transfer payments, their average income would have amounted to a mere 6% of the national average.

Government transfer payments tend to reduce the overall inequality of income distribution. The share of the lowest decile families amounted to 1.5% of aggregate income in 1985. If government transfer payments were excluded from total income, the share of the lowest decile would drop to only 0.6%. Without government transfer payments, the cumulative share of the five lower deciles would drop from a total of 25% to 21% and that of the upper five deciles would increase from 75% to 79%.

Distribution of family income with and without government transfer payments, 1985

Transfer payments reduce income inequality.



Source: 1986 Census of Canada

This is illustrated by two Lorenz curves in the chart below. The horizontal axis represents the cumulative distribution of families arranged in order of their income size and the vertical axis represents the cumulative distribution of total income. The Lorenz curve shows the percentage of total income received by a specified percentage of families.

If all families received an identical amount of income, the Lorenz curve would coincide with the diagonal. The farther a curve is from the diagonal, the more unequal the distribution of income is. The actual income distribution curve is closer to the diagonal than the curve showing the distribution of income excluding government transfer payments. Thus, government transfer payments tempered the inequality of income distribution.

Changes in government transfer payments between 1970 and 1985

Although the overall incidence of government transfer payments changed little between 1970 and 1985, there were significant changes in the *incidence of specific government transfer payments* (Table 2). The continuing increase in the proportion of the elderly population and the growing numbers of recipients of Canada/Quebec Pension Plan benefits increased the incidence of government pensions to the elderly from 12% in 1970 to 17% in 1985.¹⁵

Secondly, although the child tax credits, introduced in 1978, were received by about one-third of all families in 1985, this benefit did not increase the overall incidence of government transfer payments because the recipient families also received family allowances. However, because of a decline in the proportion of families with young children entitled to family allowances, the incidence of family allowances declined from 62% in 1970 to 54% in 1985.

Transfer payments and low income families

The choice of the bottom decile, to examine the impact of government transfer payments on family income, was made for its conceptual unambiguity and simplicity compared with more sophisticated measures such as Statistics Canada's low income cut-offs.¹⁴ About 92% of the lowest decile consisted of such low income families. Although larger families have generally higher incomes, and are, therefore, less likely to be in the lowest decile, the decile accounted for about two-thirds of all low income families according to Statistics Canada's low income cut-offs in 1985.

The impact of government transfer payments becomes even clearer when the position of families is examined in relation to Statistics Canada's low

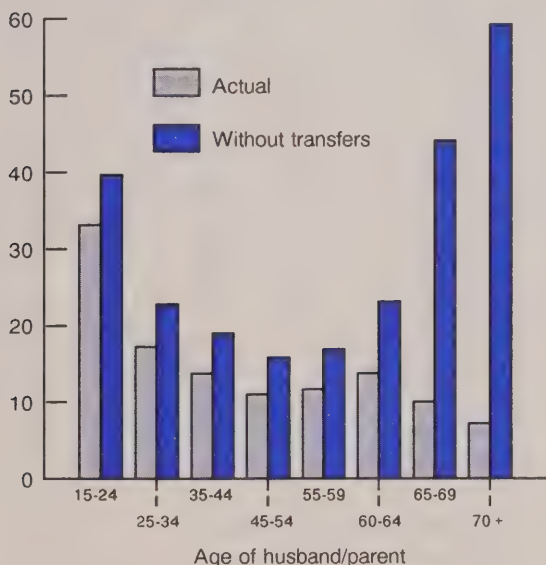
income cut-offs. In 1985, the incomes of 942,800 census families (14.1% of all families) were below these low income cut-offs. Another 715,000 families would have fallen below the cut-offs without government transfer payments, increasing the proportion of such families to 24.8%. Over one-half (403,000) of these additional families would have been elderly.

In 1985, beginning at 33.2% for very young families (15-24 years), the proportion of families below Statistics Canada's low income cut-offs falls, almost steadily, as families go through the life cycle. Only 7.1% of the families headed by persons 70 years and over fell into the low income category. Without government transfer payments, the proportion of low income families would have increased in all age groups, reaching three out of five families in the oldest age group.

Low income families with and without government transfer payments, 1985

Without transfer payments, over one-half of all elderly families would have been below the low income cut-offs in 1985.

Percentage with low income



Source: 1986 Census of Canada

Thirdly, the incidence of other government transfer payments, which include unemployment insurance benefits, provincial income supplements and social assistance, more than doubled, from 18% in

1970 to 40% in 1985. Changes in the unemployment insurance legislation and the introduction of provincial income supplements and grants to the elderly have been major factors in this increase.

The changes in the lowest decile do not follow this pattern. On the one hand, the movement of the elderly families out of the lowest decile reduced the incidence of government old age pensions in the bottom decile from 27% in 1970 to 11% in 1985. On the other hand, the concentration of lone-parent families with young children increased the incidence of family allowances and other government transfer payments among families in the lowest decile.

Between 1970 and 1985, the average amount of government transfer payments received by families increased as a result of expansion and enrichment of various programs. This led to significant changes in the *composition of family income*. Between 1970 and 1985, the share of government transfer payments in the total income of all families increased substantially. Compared with five cents of every dollar of family income in 1970, nearly ten cents came from government transfer payments in 1985. The benefits to the elderly in the form of government old age pensions and income supplements under other transfer payments were the main source of this increase.

Table 2
Sources and composition of family income, census families, 1970 and 1985

Source of income	All families		Lowest decile families	
	1970	1985	1970	1985
%				
INCIDENCE				
All sources	99.7	99.7	97.1	96.9
Employment income	91.8	85.7	57.0	52.5
Government transfers	78.0	79.7	83.0	84.8
OAS/GIS and C/QPP	12.1	16.9	26.8	11.2
Family allowances	62.2	53.7	52.3	63.7
Child tax credit	—	35.4	—	61.9
Other	18.5	39.5	27.1	53.5
Investment income	35.2	40.2	17.4	13.2
Retirement pensions	6.7	10.9	4.1	3.2
Other money income	4.0	6.9	3.3	7.5
Number of families ('000)	5,055	6,733	505	673
COMPOSITION				
All sources	100.0	100.0	100.0	100.0
Employment income	88.5	81.1	30.6	29.6
Government transfers	5.4	9.5	60.1	63.3
OAS/GIS and C/QPP	2.0	3.6	32.3	8.0
Family allowances	1.4	1.0	7.5	7.1
Child tax credit	—	0.6	—	7.0
Other	2.0	4.3	20.3	41.1
Investment income	4.1	6.0	5.5	2.1
Retirement pensions	1.3	2.6	2.0	1.8
Other money income	0.7	0.8	1.8	3.2
Average family income (1985 dollars)	29,803	37,827	4,350	5,650
Average transfer payments (1985 dollars)	1,596	3,593	2,614	3,579

Sources: 1971 and 1986 Censuses of Canada

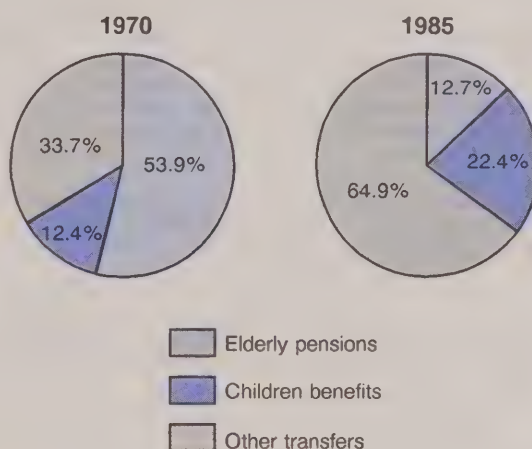
As noted earlier, government income security programs helped most elderly families move out of the lowest decile into the second and third deciles between 1970 and 1985. Their place in the lowest decile was taken by lone-parent and young families. This resulted in major changes in the *composition of transfer payments* received by the families in the lowest decile. Compared with 54% in 1970, only 12% of all transfer payments received by the lowest decile families consisted of old age pensions in 1985. In contrast, family allowances and child tax credits increased from 12% to 22%, while other government transfer payments increased from 34% in 1970 to 65% in 1985.

The importance of government transfer payments becomes even clearer when census families are classified by *major source of income* (Table 3). Although employment income retained its predominant position over the years, the proportion of families with employment income as their major source declined by ten percentage points from 87.3% in 1970 to 77.8% in 1985. A similar change occurred for families in the lowest decile. Compared with 44.6% in 1970, families with employment income as their major income source formed 34.1% of the bottom decile.

The overall increase in the income from government transfer payments had a dual effect. On the one hand, the proportion of families with these payments as their major source of income nearly doubled, from 8.7% in 1970 to 15.7% in 1985. On the other hand, families with government transfer payments as their major source of income became less likely to be in the bottom decile. The proportion of such families in the lowest decile dropped from over one-half in 1970 to a little over one-third in 1985.

Composition of government transfer payments in the lowest income decile

Between 1970 and 1985, significant changes occurred in the composition of transfers in the lowest decile.



Sources: 1971 and 1986 Censuses of Canada

Summary

Canada has a comprehensive system of income security and social welfare, which involves all levels of government. The system provides cash benefits to individuals and families. The overall incidence of government transfer payments among families is very high (80% in 1985). In the lowest income decile, nine out of ten families received some form of monetary assistance in 1985. About two-thirds of the total income of the families in the lowest decile came from government transfer payments.

Government transfer payments temper inequality of income distribution. Families forming the bottom one-tenth on the income scale received 1.5% of the total income received by all families in 1985.

Table 3
Distribution of census families by major source of income, Canada, 1970 and 1985

Major source of income	All families		Families in the lowest decile		Percentage of major source group in the lowest decile	
	1970	1985	1970	1985	1970	1985
	%					
All families	100.0	100.0	100.0	100.0	10.0	10.0
No income	0.3	0.3	2.9	3.1	100.0	100.0
Employment income*	87.3	77.8	44.6	34.1	5.1	4.4
Government transfers	8.7	15.7	47.4	56.1	54.2	35.8
Investment income	2.0	3.2	2.9	3.4	14.8	10.7
Other money income	1.7	3.0	2.2	3.3	12.5	10.8

Sources: 1971 and 1986 Censuses of Canada

* Wages and salaries and self-employment income.

Without government transfer payments, their share would have amounted to only 0.6%.

Compared with five cents of every dollar of family income in 1970, nearly ten cents came from government transfer payments in 1985. On the whole, the proportion of families with government transfer payments as their major source of income almost doubled between 1970 and 1985.

The impact of government transfer payments on certain groups is crucial. Most

lone-parent families with young children would be in a very distressing economic situation without the child tax credits and family allowances. Similarly, the Guaranteed Income Supplement and other assistance to the elderly have ensured reasonable well-being for them. Thus, the income security programs introduced during the last two or three decades provide protection to children and the elderly, the two segments of the population whose earning capacity is limited. □

Notes

¹ Each income security program has its own conditions of coverage. For details on about 100 federal, provincial and municipal programs providing financial benefits to Canadians, see *Inventory of Income Security Programs in Canada, January 1988*, Health and Welfare Canada. For a summarized overview, see *Health and Welfare in Canada*, Health and Welfare Canada, Catalogue No. H21-102/1989.

² In 1985, about 45% of the lowest income decile consisted of lone-parent families with young children, 25% were couples without children and the remaining 30% were couples with children of varying ages. For a

detailed analysis of the changes in the composition of the lowest income decile between 1970 and 1985, see *The Changing Profile of Low Income Families, 1970-1985*, Analytical Report No. 4, 13-588 (forthcoming).

³ Readers interested in more detailed definitions should consult the listed references.

⁴ This family concept differs from the broader concept of an *Economic Family* which consists of all individuals in a household who are related by blood, marriage or adoption. For details, see *Families*, The Nation Series, 1986 Census of Canada, Statistics Canada, Catalogue No. 93-106.

Notes

⁵ According to census estimates, government transfer payments to census families in 1985 amounted to \$24,196 million. Another \$3,280 million were received by persons not in families. Government transfer payments to non-family persons are not analyzed in this paper.

⁶ For details, see *Family Income: Census Families*, The Nation Series, 1986 Census of Canada, Catalogue No. 93-117.

⁷ For details, see *Census Handbook*, 1986 Census of Canada, Catalogue No. 99-104.

⁸ The qualitative assessment of income estimates from the 1971 Census is contained in *An Evaluation of Income Data from the 1971 Census of Canada*, Research Memorandum No. 71-EC-5, April 1976. A similar procedure was adopted to evaluate the data from the 1986 Census.

⁹ Other government transfer payments are more common among low income families and their under-reporting is, therefore, of greater concern in an analysis of these families.

¹⁰ Statistics Canada has now developed a new data base (SPSD/M), which is built upon the data from the Survey of Consumer Finances (SCF) after making adjustments for the underreporting of income components. The possibility of similar adjustments to the SCF and Census data is being explored.

¹¹ At the individual level, the incidence of unemployment insurance benefits is, of course, lower

but the probability of a family receiving these benefits is much higher since the presence of multiple recipients of these benefits in a family is quite low.

¹² Most of the families in the lowest decile are headed by lone parents (who have very little participation in the labour force) and the second decile has a concentration of elderly families (who are generally retired and no longer active in the labour force).

¹³ Some of the transfer payments included in the "Other" category are not related to the recipient's income from other sources. This explains the incidence of other transfer payments among families in upper deciles.

¹⁴ For a brief description of the concept and methodology underlying Statistics Canada's low income cut-offs, see *Family Income: Economic Families*, The Nation Series, 1986 Census of Canada, Catalogue No. 93-118. Statistics Canada is currently in the process of concluding an overall review of these cut-offs. For details, see *Statistics Canada's Low Income Cut-Offs, Methodological Concerns and Possibilities: A Discussion Paper*, Research Paper Series, Analytical Studies Branch, Statistics Canada, December 1989.

¹⁵ In 1970, data on Canada/Quebec Pension Plan benefits were collected in combination with Old Age Security and the Guaranteed Income Supplement while the data on unemployment insurance benefits were included in other government transfer payments. It is therefore not possible to examine changes in the incidence of these two benefits separately.

References

Health and Welfare Canada. *Health and Welfare in Canada*. Catalogue H21-102/1989. Ottawa, 1989.

Health and Welfare Canada. *Inventory of Income Security Programs in Canada*. January 1988, Catalogue H75-16/1988. Ottawa, 1989.

Rashid, A. *An Evaluation of Income Data from 1971 Census of Canada*, Research Memorandum No. 71-EC-5. Ottawa: Statistics Canada, April 1976.

Rashid, A. *Family Income*. 1986 Census Focus on Canada Series, Catalogue 98-128. Ottawa: Statistics Canada, July 1989.

Rashid, A. *Sources and Distribution of Canadian Income*. 1971 Census of Canada, Catalogue 99-721, Vol. 5, Part 2. Ottawa: Statistics Canada, November 1977.

Rashid, A. *The Changing Profile of Canadian Families with Low Income, 1970-1985*, Analytic Report No. 4 13-588. Ottawa: Statistics Canada, 1990. Forthcoming.

Statistics Canada. *Changes in Income in Canada: 1970-1980*. 1981 Census of Canada, Catalogue 99-941. Ottawa, May 1984.

Statistics Canada. *Census Handbook*. 1986 Census of Canada Reference Series, Catalogue 99-104E. Ottawa, June 1988.

Statistics Canada. *Families*. 1986 Census Focus on Canada Series, Catalogue 93-106. Ottawa, 1989.

Statistics Canada. *Family Income*. 1986 Census Focus on Canada Series, *Census Families*, Catalogue 93-117. Ottawa, December 1989.

References – Concluded

Statistics Canada. *Family Income*. 1986 Census Focus on Canada Series, *Economic Families*, Catalogue 93-118. Ottawa, February 1990.

Statistics Canada. *Income Distributions by Size in Canada*, annual, Catalogue 13-207. Ottawa, 1989.

Wolfson, M.C. and et al. *Statistics Canada's Low Income Cut-Offs, Methodological Concerns and Possibilities: A Discussion Paper*, Research Paper Series No. 3049E. Ottawa: Statistics Canada, 1989.

Shifting patterns of unemployment distribution since the 1960s

Dave Gower

The article "Canada's Unemployment Mosaic", published in the Summer 1989 issue of *Perspectives on Labour and Income*, reported that unemployment in Canada became less evenly distributed over the regions from the mid- to the late 1980s. This shift occurred because unemployment declined more quickly in areas such as Toronto than in less prosperous regions such as non-metropolitan Newfoundland and the Lower St. Lawrence.

Clearly, when looking at the unemployment picture, the aggregate unemployment rate is not the only important figure; it is also useful to examine how evenly the unemployment is distributed. The article measured changes in the regional inequality of economic opportunity. These differences in unemployment rates reflected the diverse probabilities of being unemployed in various regions of the country.

The conclusion of the article – that this unevenness between regions was increasing – raises several questions. One of the most obvious is whether this is a new phenomenon, or has it happened in the past. This article examines the question, using data from 1966 onward.

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Defining regions

The previous study analyzed data for 40 subprovincial areas, including 24 Census Metropolitan Areas (CMAs) and 8 non-CMA subprovincial areas in Ontario and Quebec. Unfortunately, changes in the geographical design of the Labour Force Survey sample mean that some of the CMAs, as well as the non-CMA subprovincial areas in Ontario and Quebec, examined in the previous article could not be tabulated for the years before 1985.

Unemployment data do, however, exist back to 1966 for 22 metropolitan areas.¹ In addition, in each province, the areas outside the CMAs are treated as if they were a single labour market. This results in 32 regions in total for this study. To summarize the unemployment data for these regions, they are divided into four quartiles, from the lowest to highest unemployment rate (see *Measuring inequality of distribution*).

Absolute and relative differences: Two perspectives on inequality

There are many ways to analyze data differences; two of the simplest measures are a ratio, or relative difference (divide one quartile by another) and an absolute difference (subtract one quartile from another).

Measuring inequality of distribution

The previous study used a fairly complex measure (the Gini coefficient) to calculate inequality in the distribution of unemployment. For this study, a simpler measure of inequality is used: a comparison of the unemployment rates in the highest and lowest quartiles of regions. The trends shown by the two measures are similar, and the use of quartiles allows a comparison of absolute and relative differences in unemployment rates.

The quartiles are derived as follows. First, the 32 areas are ranked by unemployment rate, from lowest to highest. Next, they are divided into four groups. Then, the average unemployment rate is calculated for each of the quartiles.

In the previous study, the areas composing the quartiles were frozen in all four years (1985 to 1988). Although this fixed composition simplifies the analysis, it can only be applied over relatively short time periods, when the comparative ranking of areas by unemployment rates does not vary much.

In contrast, this report varies the composition of the quartiles from year to year (Edmonton fell from Quartile 1 in 1982 to Quartile 3 in 1983). The proportion of the labour force in each quartile is kept at 25% of the national labour force. If an area crosses quartile boundaries, the labour force (and also the unemployed) are divided between the two quartiles to maintain intervals of equal size. For example, by 1984, Edmonton's unemployment position had slipped until it ranked in the lowest level of Quartile 3. But to include Edmonton's entire labour force in Quartile 3 would have pushed the quartile population over the 25% margin; therefore, its labour force and unemployment totals were split, with 18% being assigned to Quartile 3 and the remaining 82% to Quartile 4.

The choice of absolute or relative difference depends on the answer one wants. When comparing, for example, the unemployment rates for Quartile 1 and Quartile 4, one might want to know that in 1981 there was a difference of 6.7 percentage points (4.4% versus 11.1%) about the same as in 1983 (6.8 percentage points – 8.5% versus 15.3%).

However, comparing these two differences is complicated by the fact that there were many more unemployed people in 1983 than in 1981. Under these circumstances, it sometimes makes more sense to examine the magnitude of the increase in relative terms, that is, how one quartile fared compared with another. Using this measure, the comparison of Quartile 1 and Quartile 4 shows substantial variation: it falls from a ratio of 2.5 to 1 in 1981 to 1.8 to 1 in 1983.

It is not immediately obvious which measure is more appropriate. Rather than impose an arbitrary choice, this study examines both measures, showing how they have moved with swings in the economy over the past quarter-century.

Table 1
Annual average unemployment rates for selected years,* by quartiles of regions

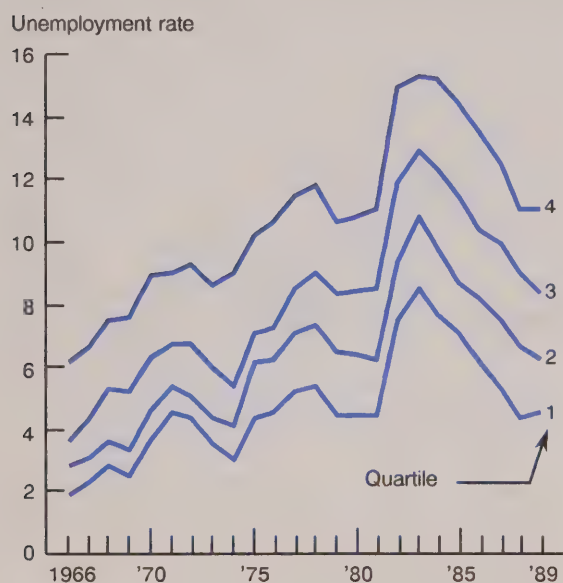
	1966	1971	1974	1978	1981	1983	1989
Canada	3.6	6.4	5.4	8.3	7.5	11.8	7.5
Quartile 1	1.9	4.5	3.0	5.4	4.4	8.5	4.5
Quartile 2	2.8	5.4	4.1	7.3	6.2	10.8	6.2
Quartile 3	3.6	6.7	5.4	9.0	8.5	12.9	8.3
Quartile 4	6.1	9.0	9.0	11.8	11.1	15.3	11.1
Ratio Q4/Q1	3.2	2.0	3.0	2.2	2.5	1.8	2.5
Q4-Q1	4.2	4.5	6.0	6.4	6.7	6.8	6.6

Source: Labour Force Survey

* Except for 1966 and 1989, the years are chosen to show turning points in cyclical movements in unemployment.

Unemployment rates by regional quartile

The unemployment rates for the four quartiles were roughly parallel throughout the economic cycles.



Source: Labour Force Survey

Absolute inequality: No particular pattern

As a general pattern, the absolute difference between the highest and lowest quartiles of regions increased when the Canadian unemployment rate increased. But this relationship failed to maintain itself in many years. For instance, as shown in the example above, although the Canadian unemployment rate rose from 7.5% to 11.8% between 1981 and 1983, the absolute difference between Quartile 1 and 4 remained nearly the same.

Not only was the long-term increase in absolute difference erratic, it did not match the growth in Canada's unemployment rates. This can be illustrated by

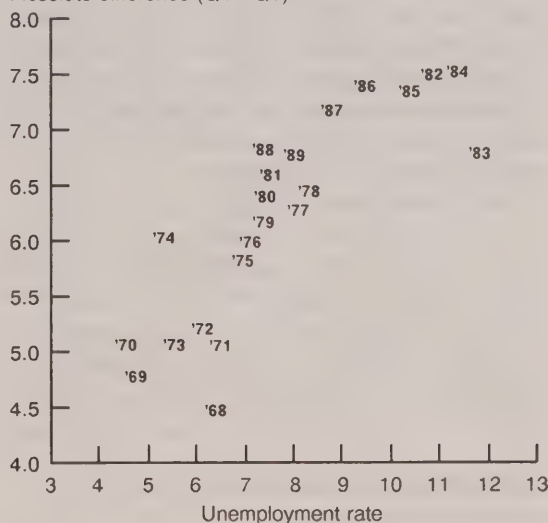
comparing 1971 and 1983 (both years of high cyclical unemployment). The national unemployment rate almost doubled (from 6.4% to 11.8%) whereas the absolute difference between quartiles rose by less than one-half (from 4.5 to 6.8 percentage points).

To interpret the data more fully, therefore, it is also necessary to look at unemployment inequality using a ratio measure.

Regional unemployment inequality versus the Canadian unemployment rate, 1966-1989

Absolute differences between quartiles 1 and 4 are related to the Canadian unemployment rate, but not closely.

Absolute difference (Q4 - Q1)



Source: Labour Force Survey

Relative unemployment inequality increases in good times

The ratio of Quartile 4 to Quartile 1 unemployment rates (called the inequality ratio) has varied considerably. From a high of 3.2 (6.1/1.9) in 1966, it slid to a low of 1.8 in 1983 (15.3/8.5).

Looking at just these two years, it seems that a low national unemployment rate corresponds to a high inequality ratio, and vice versa. In other words, unemployment becomes less equally distributed as the national unemployment rate declines.

Is this a general pattern? There was, indeed, an overall relationship between the national unemployment rate and the relative inequality of distribution of unemployment across the country. In 1966-68, again in 1969-72 and 1974-75, and most dramatically in 1981-83, rises in Canada's unemployment rate corresponded to drops in inequality. Furthermore, in 1972-74 and 1983-88, the unemployment rate dropped and inequality rose.

Underlying this relationship is the fact that the unemployment rates for low-unemployment areas are, on a proportionate basis, more volatile than rates in high-unemployment areas. Put another way, the unemployment rates in the less prosperous areas of the country do not fluctuate, in relative terms, as widely as they do in low-unemployment areas.

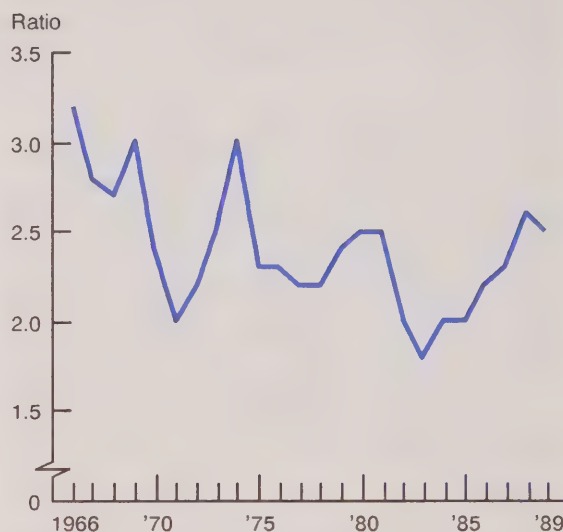
One striking illustration is found in the period of economic growth between 1983 and 1989 (Table 1). Quartile 4 unemployment rates dropped by only one-quarter (15.3% to 11.1%). In comparison, Quartile 1 rates dropped by almost one-half (8.5% to 4.5%).

Unemployment inequality decreasing over the long term

Relative inequality has fluctuated widely, but over the full 1966-1989 period it appears to have a slight downward trend. However, there is a complicating factor: unemployment rates rose markedly between 1966 and 1989. The rates in the best years of the 1980s (1980-81 and 1989) were higher than in the worst years of the 1970s (1971-72). If inequality of unemployment distribution is linked to the unemployment rate, the next question is whether the "trade-off" between the two is shifting.

Ratio of unemployment rates for the fourth and first quartiles

Relative inequality in the distribution of unemployment varied with economic swings.



Source: Labour Force Survey

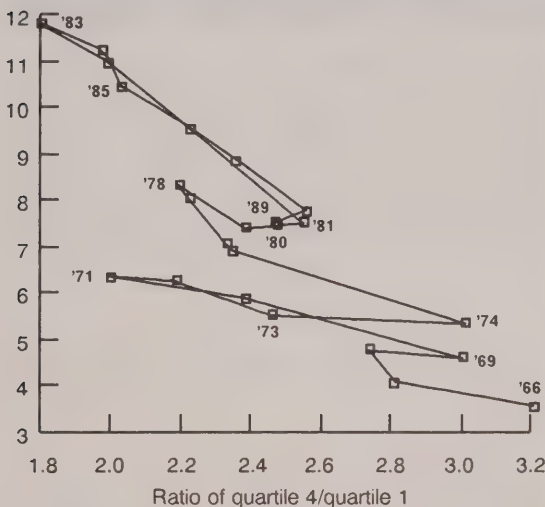
Over the past quarter-century, the level of unemployment associated with a given level of relative inequality has risen. As the economy has moved through business cycles, lower unemployment has coincided with greater inequality. However, the relationship appears to have "ratcheted" upwards; that is, although the economy may return to an unemployment rate similar to that experienced at an earlier time, relative inequality has worsened (Table 1).

This shift appears evident over the 1966-1980 period. The speed at which it progressed can perhaps be most easily measured by comparing the years 1973 and 1980. (Both of these years are at similar points in the business cycle.) The inequality ratio was similar in 1973 and 1980 (about 2.5); but the unemployment rate rose two points, from 5.6% to 7.5%. In other words, the unemployment rate associated with a

Relative inequality of regional unemployment versus the Canadian unemployment rate, 1966-1989

Relative inequality tends to rise as unemployment falls, but the relationship appears to have shifted over time.

Unemployment rate



Source: Labour Force Survey

given level of relative inequality of unemployment distribution rose one percentage point approximately every four years.

Equally interesting is that the shift seems to have stopped in the 1980s – the trade-off line in 1989 is in almost exactly the same spot as in 1980.

Some light is shed, but questions remain

Many economic theories of comparative regional economic performance exist, but it is beyond the scope of this article to speculate about possible explanations for the patterns observed.

However, the upward shift in the level of regional inequality of unemployment associated with a given national unemployment rate can be expected to affect the inflationary pressure put on wage rates at any given level of unemployment. An unequal distribution of unemployment means that unemployment rates in some areas are well below the national average. Labour shortages may therefore develop in these areas, as indeed they appeared to have in the late 1980s. The resulting wage pressures contributed to rising inflation in the country as a whole.

This study may have raised more questions than it answered, but it does illustrate the difficulty in achieving and maintaining equality of economic opportunity across all regions of a country as large and diverse as Canada. □

Note

¹ This shorter list gave slightly different values than the 40 regions when estimating the inequality of distribution of unemployment. But for the five years 1985-1989, when both series could be compared, the trends proved similar.

Boundaries of some of the metropolitan areas were redefined during the 1966-1989 period. Although this could change the size of the labour force and unemployment estimates substantially, the unemployment rates are less affected because the changes to both the numerator and denominator were similar. Most important, the unpublished detailed data tables show

that the measure of inequality of distribution does not seem to have been noticeably affected by these changes.

A few of the 32 areas, particularly in the 1960s, had such small unemployment estimates that sampling error would have introduced an additional degree of artificial inequality. An experiment was performed to investigate the impact on the results reported in this paper. A three-year moving average was run through the data series, and the results suggest that sampling error did not seriously distort the general trends reported in this study.

Reference

Grubb, D. "Regional Unemployment in OECD Countries." *Employment Outlook*, Paris: Organisation for Economic Co-operation and Development, July 1989, pp. 95-131.

Sources

A potpourri of information: survey news, including special surveys conducted as supplements to the Labour Force Survey; notes on research projects inside and outside Statistics Canada; recent publications and data releases; other items of news and future events.

GSS Cycle 4 analysis slated for winter release

Two reports based on Cycle 4 of the General Social Survey on education and work are scheduled for publication this winter. The first analytical report, as yet untitled, is an overview of educational plans, recent work experience and movement between jobs, use of computer technology, job satisfaction and opinions on retirement. The second report, *Quality of Work in the Service Economy*, offers a detailed analysis of employment in the services industry, examining issues such as occupational segregation, self-employment and temporary employment by various demographic and socio-economic variables.

The Cycle 4 survey was conducted from January to March 1989; a total of 9,338 individuals were interviewed about their educational background, plans to further their education, if and how computers had affected their jobs, and mandatory retirement. (For a description of the aims, structure and methodology of the GSS, please refer to "Sources" in *Perspectives*, Spring 1990.)

A public use microdata tape and a short booklet containing preliminary results are now available. Among the findings are the following:

- 16% of Canadians aged 15 and over were working toward a diploma or degree; a further 24% (one-quarter of them already employed) intended to start an educational program in the next five years;
- work was the principal reason for wanting more educational qualifications: 29% of respondents wanted to prepare for a first job, 33% to improve their present career, 10% to change careers and 10% to improve earnings; men were more likely than women to want higher academic qualifications to improve their earnings;
- almost one-third of Canadians over 15 have taken a computer course; not surprisingly, the proportion is much higher (58%) for those 15-24 than any other age group; also, women 15-24 and 25-44 are more inclined than men of the same age to take computer courses;
- although 43% of working Canadians reported that in the last five years their work had been affected by computer technology, an equal proportion (42%) believed that it had not changed their work;

- although more women than men (44% versus 40%) reported that their jobs had not been affected at all by computer technology, a greater proportion of women (38% compared to 31% of men) used computers in their jobs;
- similar proportions of men and women used their computers for word processing, data entry and record keeping, but many more men used them to write programs, analyze data and play games;
- although 62% of adults do not agree that retirement should be mandatory, 43% plan to retire before age 65; early retirement was most popular among people age 25-44, with about half of them wanting to leave the work force before age 65.

For further information about Cycle 4, please contact Ghislaine Villeneuve at (613) 951-4995; for information about the GSS project, please contact Doug Norris at (613) 951-2572. □

Updated labour force income and economic dependency ratio profiles soon available

The Small Area and Administrative Data Division is updating its labour force income and economic dependency ratio profiles to include 1989 data. When the work is completed in early spring 1991, the profiles will provide annual data for the years 1984 to 1989.

The profiles present information about the amount and source of income reported by Canadian taxfilers. The profiles are unique in providing data for very small geographic areas. The basic level of detail is

the Census Division, but customized profiles can provide data for much smaller geographic areas, subject to confidentiality restrictions. Tabulations can be made to the FSA or the rural postal code level. (An FSA, or Forward Sortation Area, is a mail delivery area the size of a few Census tracts. However, to protect confidentiality, the areas requested cannot consist of fewer than 100 taxfilers.)

The labour force income profile offers statistics on the number of taxfilers in the area, total and median income, employment income and unemployment insurance benefits. Because the data are generated from the income tax file, the income data relate to taxable sources of income only. "Windfall" income (lottery winnings, inheritances) and non-taxable income such as social assistance, workers' compensation and veterans' allowance, are excluded.

A sister product is the economic dependency ratio (EDR) profile. The EDR compares the total reported transfer payments to the total employment income in an area, and then breaks down these payments into their component parts: private and public pensions, Family Allowance, Unemployment Insurance, Old Age Security, and the Federal Sales Tax and Child Tax Credits. (The Federal Sales Tax Credit, introduced in 1986, has improved the coverage provided by the profiles: in previous years, the elderly were under-represented because many of them had low or non-taxable incomes. The credit has increased the number of seniors filing tax returns to claim the refund.)

With the labour force income and EDR profiles for 1988, users can find the following facts about the County of York in New Brunswick (this county includes the city of Fredericton):

- 53,625 people filed tax returns on a total income of almost \$1.1 billion;

- the median income was \$15,900, 16% higher than the provincial average but 8% less than the national average;
- 80% of all taxfilers had income from labour force activity (including UI benefits); of these taxfilers, 98% reported receiving income from employment, 10% from self-employment and 24% from UI benefits (numbers do not add to 100% because one individual may have multiple sources of income in a year);
- the economic dependency ratio (EDR) in 1988 was 18.5%, meaning that transfer payments were almost one-fifth the size of employment income; more than half of these payments were pension benefits (mainly private but also public);
- at the other end of the spectrum, family allowance benefits and child tax credits contributed only 1.76 percentage points to the EDR, amounting to less than one-tenth of all transfer payments.

Both the labour force income, and the economic dependency ratio profiles provide indexes that compare the area under review with the provincial and national average. They also present percentage change figures for year-over-year comparisons.

For more information about the profiles, call Customer Services, Small Area and Administrative Data Division, at (613) 951-9720. □

New LMAS study of workers who leave their jobs

Factors that affect people's labour market experience when they leave a job are examined in a recent report based on the Labour Market Activity Survey (LMAS).

Characteristics of Labour Market Change, by professors M.G. Abbott, C.M. Beach and S.F. Kaliski of Queen's University, dissects employment dynamics using variables designed to show: (1) if job leaving was a job loss (employer-initiated) or a quit (worker-initiated); (2) length of unemployment following job separation; and (3) how the new job compared to the old one in terms of full- or part-time work, wages and industry. The 160-page report comprises two parts: the first details the labour market experience of Canadian adults; the second describes the regression model developed by the authors to test the significance of the different factors affecting success in finding a new job after leaving an old one.

The data are drawn from the LMAS of January 1987 and February 1988, which collected information on the labour market activity of the same individuals over a two-year period. The study confirms much of the conventional wisdom: people who lose their jobs are unemployed longer than people who quit; job losers are more likely than job quitters to find new jobs in a different industry, to make smaller wage gains and to take part-time work; and older job losers are more greatly affected.

A more detailed profile of job leavers shows that:

- unemployed men were without work an average of 3.7 weeks and women 2.9 weeks; persons aged 20-24 reported the longest periods of unemployment, at 6.2 weeks for men and 4.5 weeks for women;
- men were just as likely to lose their jobs as to quit, whereas women were twice as likely to quit;
- people who quit tended to move straight into a new job, but workers who lost their jobs were far more likely to experience a period of unemployment;

- periods of unemployment for job losers were progressively longer for men as they grew older; among women, however, those aged 20-34 tended to be unemployed longer than older women;
- in terms of wages and salaries, people who moved immediately from one job to another did better than people who experienced joblessness: men increased their wages by \$1.38 an hour and women by \$1.01; men who had been unemployed gained \$0.17 in the new job while women lost \$1.80;
- 37% of male and 53% of female job losers who eventually got part-time work wanted more hours, but only half of them wanted full-time jobs of 30 or more hours a week.

After developing the worker profile, the authors created a regression model to determine the extent to which various characteristics influence a worker's labour force adjustment. (A regression model isolates the "net effect" of each variable while holding the effect of the other variables constant.) The model shows that:

- workers in the Atlantic provinces, followed by those in British Columbia, have the lowest incidence of continuous employment (worked throughout 1986 at a single job with no break in employment of more than a week);
- the incidence of unemployment after losing or quitting a job is no greater in the Atlantic provinces than in many other regions; however, the incidence of withdrawal from the labour force is much higher;
- workers with longer job tenure are less likely to leave their jobs, but if they do, it is generally because they have quit;

- job tenure does not affect prospects for either re-employment or unemployment, although it is positively related to labour force withdrawal;
- the higher a worker's educational qualifications, the greater the likelihood of continuous employment – workers with elementary schooling have the lowest job stability and those with university degrees have the highest;
- low wage workers have less job continuity than higher wage earners; furthermore, part-time workers are much more likely to be immediately re-employed after leaving a job than are full-time workers;
- union members are also less likely than non-union workers to leave their jobs, supporting evidence from the United States that unions reduce job turnover.

To obtain a copy of *Characteristics of Labour Market Change*, please call Cindy Sceviour at (613) 951-0294. For further information on the LMAS and its products, please contact Richard Veevers at (613) 951-4617. □

New Census product zeroes in on Employment Equity target groups

Products based on new manipulations of the 1986 Census database continue to offer important information about Canadian society. Of particular interest to human resource program administrators and labour market analysts is the new *Profile of Visible Minorities and Aboriginal Peoples*.

The Profile offers demographic and socio-economic information about 12 visible minority communities in Canada. The groups chosen are those defined by the

Interdepartmental Working Group on Employment Equity, which assists Employment and Immigration Canada (EIC) in administering the federal legislation governing equality in the workplace. They are:

- Blacks
- Indo-Pakistanis
- Chinese
- Koreans
- Japanese
- South East Asians
- Filipinos
- West Asians and Arabs
- Pacific Islanders
- Latin Americans
- multiple visible minorities (e.g. people of Chinese and Korean ancestry, Latin American and Black)
- total aboriginals (including multiples with visible minorities).

The 1986 Census did not directly ask if respondents were members of a visible minority group. The question on ethnic origin, in conjunction with mother tongue and place of birth when necessary, was used to derive the minority populations for the profile. However, analysts should not confuse minority group membership with ethnic origin. For example, a member of Montreal's Black community may report Haiti as a place of birth and French as ethnic origin. In other words, skin colour can bear little relationship to cultural heritage.

Profile of Visible Minorities and Aboriginal Peoples paints a socio-economic and demographic portrait of the chosen minorities. Among the findings:

Blacks

- with over 355,000 members in 1986, the Black community was the second largest visible minority group in Canada (after the Chinese community); 94% of Blacks

in Quebec lived in Montreal, 79% of the Ontario Black community lived in Toronto;

- 14% of Black women and 9% of Black men were in professional fields, while 3% and 6% respectively worked in middle and upper management positions;
- 6% of men and 2% of women were self-employed in either incorporated or unincorporated businesses.

South East Asians

- over four in five members of Canada's South East Asian minority were immigrants, with the great majority of them (86%) having arrived between 1978 and 1986; despite the large proportion of recent immigrants, 60% of South East Asians were Canadian citizens;
- the overall labour force participation rate of adults in Quebec was 64%; the proportions of men and women either working or looking for work were 72% and 55% respectively.

Indo-Pakistanis

- 36% of Canada's Indo-Pakistani community was between the ages of 25 and 44;
- 48% of adult men and 36% of adult women had a postsecondary diploma or degree; men tended to specialize in engineering and applied sciences and trades (41%), while women leaned toward commerce and business administration (28%) and health professions and sciences (13%).

Latin Americans

- the average income of Latin American men was \$17,160 in Canada, but in Ontario (home to about half the community), it was \$18,171; the difference in women's income was not so great – \$10,065 nationally compared to \$10,460 in Ontario;
- only one out of five Latin Americans in Canada reported English or French as his or her mother tongue (among those reporting only a single response); it is interesting to note that in eight major metropolitan areas, more than one-third of this group spoke English or French at home, except for Montreal, where only 24% did so.

The Profile presents data for individuals only; visible minority families and households were not delineated. The data are based on the 20% Census sample of the population and the variables presented include age, immigrant status, citizenship, education, labour force status, industry, occupation, income and major source of income. Geographic coverage is provided for Canada, the provinces and territories and eight major CMAs. The series is available in two formats: paper (about 500 pages) for \$95; and electronic (diskette or magnetic tape) for \$250. Documentation describing definitions and limitations of the data is also provided, whichever format is purchased.

For information about *Profile of Visible Minorities and Aboriginal Peoples*, contact your nearest Statistics Canada Regional Reference Centre.

Note: The federal government also identifies women and the disabled as designated groups for employment equity initiatives. Ample demographic and socio-economic information on women is available from the

1986 Census. The Health and Activity Limitation Survey (HALS), also conducted in 1986, provides data on Canadians with disabilities. □

Survey results on women's career advancement released

In September 1988, the Treasury Board created the Task Force on Barriers to Women in the Public Service. One of the many actions taken by the Task Force was to sponsor a survey of the public service. An analytical report on the results has recently been published.

The survey's main goal was to evaluate any differences in the advancement of men and women since entering the public service. It also asked civil servants themselves if they think barriers to women exist. The survey was conducted in June 1989 by Abt Associates, a private company commissioned by Statistics Canada. A questionnaire was distributed to 20,000 public servants of both sexes and the response rate was 60%.

The report, *Analysis of the Survey on Barriers to Advancement in the Public Service*, paints a general portrait of women who have advanced rapidly through the ranks (that is, women who have experienced greater advancement than their colleagues over the same number of years). It describes them as younger women with longer service who entered the public service in either a part-time or term position, have children aged 6-11 at home and live in the Ottawa-Hull region, are members of a visible minority and have had language training. Although they were denied a developmental opportunity in the past three years, they also sought and won a promotion during that period.

General results of the survey show that:

- overall, women advanced 5% faster than men but started in lower level jobs; furthermore, this rate is not consistent across all occupations, and in some sub-groups, women's rate of advancement was half to one-third that of men;
- women were slightly more likely than men (57% versus 53%) to request development opportunities and this gap grew as the higher levels were reached;
- virtually equal proportions of men (52%) and women (53%) asked for promotions – 67% of the men and 69% of the women were turned down; in all major occupations except managerial and technical, men were more likely to be refused a promotion;
- the reasons women most frequently cited for being denied a promotion were "management decisions", "I'm not part of the group" and "being anglophone";
- pregnancy, child care and sex stereotyping were also reported to be significant barriers to promotion; 25% of women with children under 12 said their family responsibilities constituted a barrier, compared with 5% of all women.

After documenting the experiences of women and men in seeking advancement, the report examines their perceptions of barriers to promotion. The survey found that:

- people who were advancing rapidly saw no significant differences between the barriers faced by women and those faced by men; among slow advancers, women were more likely to attribute a denied promotion to management's reluctance to replace them;
- all respondents believed that training and education were the most effective means of overcoming barriers to advancement; respondents also thought that a change in management's attitude was the second most important factor, although those who had been denied promotion were considerably more likely to cite this as a solution;
- similarities between the sexes ended when they were asked specifically if barriers to women exist – almost two-thirds of women said that women hit an invisible barrier when they reach a certain level, about half as many men agreed; women in management and in the scientific and professional occupations were most likely to agree about invisible barriers;
- 57% of women believed that they have to be more qualified than men to be promoted, compared with 20% of men; women in the male-dominated managerial positions were most emphatic in their agreement, while men in the female-dominated administrative support occupations were least likely to believe it;
- half of the male respondents believed that affirmative action programs gave women an unfair advantage when the public service was downsizing, while less than one-quarter of women agreed;
- male and female opinion converged again when 81% of women and 78% of men agreed that positions are often opened to competition after management has already identified the person it wants for the job;
- a majority (52%) of all respondents believed that francophones get ahead more quickly, with no significant

difference between male and female respondents; instead, the split was along linguistic lines as francophones strongly disagreed (60%) and anglophones agreed (69%);

- 4% of men suggested abolishing the Employment Equity Program to prevent reverse discrimination.

To obtain a copy of *Analysis of the Survey on Barriers to Advancement in the Public Service*, please contact the Special Surveys Group of Statistics Canada at (613) 951-0294. □

1991 Census questions approved by cabinet

In May, the federal government cabinet approved the 45 questions that will be asked in the 1991 Census. They cover an exceptional range of demographic and socio-economic variables, and include 16 questions directly concerned with income and labour force characteristics.

Many Canadians consider their work force and income status to be sensitive topics, but no other survey instrument provides this information at such a detailed geographic level, and the answers are important for a variety of reasons.

The data are used by all levels of government to develop training programs, education strategies, income support and regional development policies. The Census anchors many other statistical projects in the private and public sectors by providing benchmark data for social and economic surveys, population characteristics needed for sample selection, and so on.

In the private sector, the data are widely applied to design new products and services, plan marketing strategies and develop innovative ways to serve clients and consumers.

The income and labour force questions are not asked of all 10 million Canadian households that receive a Census questionnaire; they appear only on the Census 2B "long form", which is completed by one in five households. The question on income contains ten segments, and covers the income received by Canadian residents at home and abroad (but not the income received by immigrants before they arrived in Canada). Respondents are asked to report the following items:

- total wages and salaries
- net income from non-farm business or professional practice
- net farm self-employment income
- old age security and guaranteed income supplement
- CPP and QPP benefits
- UI benefits
- other income from government sources
- dividends and interest on bonds, deposits and other investment income
- pensions and annuities
- other money income, e.g. alimony, child support, royalties, strike pay.

Respondents exclude such "extraordinary income" as capital gains, inheritances and lottery prizes. By ignoring windfalls and restricting the definition to regular or predictable sources of income, the Census ensures that it collects data on the real income flow of Canadians, that is, the money people rely on to make purchasing, investment and savings decisions.

Labour force characteristics describe working life in Canada, and as such they are one of the most frequently requested blocks of Census data. In conjunction with other sources, Census labour force data are used to develop and deliver social and economic programs, profile Canada's labour supply, analyze and forecast occupational demand based on industry growth trends, evaluate trends in seasonal or part-time work,

examine the reliance of small firms and industries such as agriculture on unpaid family workers, and address myriad other important industry and occupation issues.

The Census captures the following information:

- number of hours worked
- work absence
- new job arrangements
- recent job search
- availability for work
- when last worked
- name of employer
- kind of business
- kind of work and most important duties
- class of worker (paid, self-employed, unpaid family)
- incorporation status of self-employed individuals
- weeks worked
- full-time/part-time work.

For further information on the 1991 Census, contact your nearest Statistics Canada Regional Reference Centre. □

Transport Canada studies substance use of workers in safety-sensitive areas

The National Alcohol and Drug Survey (NADS), whose results are reported in "Under the Influence", was not the only substance use survey undertaken by the federal government recently. Transport Canada also examined alcohol and drug consumption among transportation workers in the private and public sectors.

To develop its strategy paper on substance use in safety-sensitive positions in the federal transportation sector, Transport Canada conducted a survey of transportation

workers. The aim was to determine existing levels of substance use among workers, their assessment of its causes and effects, and possible solutions to abuse problems. (The study contained many additional elements, including a review of current literature on the effects of substance use on job performance, employee assistance programs in industry, causes of transportation accidents, and public attitudes to alcohol and drug testing.)

A brief overview of the survey results is presented here. However, because of the different definitions and methodologies used by the Transport Canada survey and NADS, data from the two surveys should not be considered comparable. In fact, the entire question of collecting statistical data on substance use through surveys is fraught with difficulty (see "From the editor").

For the survey, the transportation sector was divided into four major groups based on mode of transport: airport, aviation, marine and surface (bus and truck). "Safety-sensitive" jobs were defined as positions in which "the job functions and responsibilities have a direct impact on either the health, safety or security of the public or ...[co-workers]... and where there is a potential risk of loss of life, injury or damage to property." Included in this category were such workers as truckers, commercial pilots and aircraft inspectors. The 18,000 respondents were queried about their use of (and attitudes to) alcohol, over-the-counter medications and illegal drugs. Since substance use was self-reported, the department warns that figures are undoubtedly conservative.

The study concluded that alcohol consumption is similar to that of the general population, as is heavy use of alcohol and consumption of drugs. (The comparison was based on publicly and privately sponsored surveys conducted before NADS.) Among the principal findings:

- alcohol consumption in the seven days preceding the survey ranged from a low of 32%-65% among airport workers to a high of 60%-85% among aviation workers;
- at 1% to 3%, airport and surface workers reported the lowest rates of heavy alcohol consumption (more than 20 drinks in the past week), with aviation workers in the mid-range (0% to 6%) and marine workers the highest (3% to 9%);
- use of over-the-counter medication averaged between 12% and 19%, with a slightly higher top range (29%) reported in the aviation group;
- use of marijuana ranged from 0.5%-7% in aviation to 7%-17% in marine transportation; use of street drugs other than marijuana was between 1%-2% in all groups, with cocaine the most frequently reported.

Alcohol and over-the-counter medications were used most often before or during working hours. According to the workers themselves, alcohol and hangovers pose the greatest danger to safe job performance.

The survey describes the typical heavy drinker as a young man under 35 who uses medications and street drugs as well as alcohol, and who tends to minimize the safety risks associated with his job. He is more likely to come to work with a hangover than his more abstemious co-workers; nevertheless, he believes that he can consume more than they before he becomes impaired.

Copies of the report are available from Transport Canada at (613) 990-2309. □

Guidelines available for comparing international statistics on labour and income

To evaluate Canadian competitiveness in the global marketplace, we must compare our performance with that of other countries. But for these international comparisons to be meaningful, there must be common definitions, or at least guidelines, to direct the compilation of statistics in each of the countries concerned. Otherwise, we risk comparing our apples to their oranges, especially in the delicate areas of labour and income.

Analysts working with international statistics in the labour and income field would be well advised to begin their research with *Current International Recommendations on Labour Statistics, 1988 Edition*, published by the International Labour Office (ILO) in Geneva. Since the 1920s, the ILO has convened fourteen "International Conferences of Labour Statisticians" to set statistical guidelines; this document compiles those Conference resolutions that are still in force. The resolutions cover a wide range of areas. One of the most important, from 1982, covers employment and unemployment and facilitates comparisons of employment growth and unemployment rates between different countries. Other recent resolutions refer to the International Standard Classification of Occupations (1987), Hours of Work (1962), Labour Costs (1966), Wages Statistics (1973), Occupational Injuries (1982) and Strikes and Lock-outs (1987).

After determining what international guidelines exist, if any, the analyst's next step is to find national data corresponding to the guidelines for each of the countries being studied. In some fields, such as employment, this is quite possible, though there are pitfalls; for others, especially income, it is still very difficult. In general, statistical

inconsistencies between countries tend to grow with the level of detail, so highly aggregated data are more likely to be comparable. (The ILO and other organizations such as the OECD already provide fairly extensive compilations of data in some fields.)

Current International Recommendations serves a valuable purpose as the basis for international comparisons. In a few cases, however, users should beware. Sometimes, as with the statistics on underemployment, the book prints two resolutions, even though the provisions of the earlier one are partially superseded by the later. Careful reading is required to ensure that the text refers to the latest agreements. It is possible that this reprinting of conflicting texts exists in part because the resolutions enumerated in the book are also designed to help countries build their statistical systems. In fact, because the ILO accommodates the needs of developing countries, the guidelines are not always as precise as they might be. Fortunately, in the employment and unemployment field, they have been amplified by the OECD and the European Community to allow better comparisons between the industrialized countries with more advanced statistical systems.

Despite these few drawbacks, *Current International Recommendations* is an essential reference work for any analyst working with international statistics. Copies are available for \$12.25 from the International Labour Office, 75 Albert Street, Suite 202, Ottawa K1P 5E7, or by calling (613) 233-1114. □

1989 data on pension plans released

Statistics Canada has recently released updated data on employer pension plans in the public and private sectors. These pension plans cover about 45% of employed paid workers in Canada. Excluded from coverage are unpaid family workers, the unemployed and the self-employed who, by definition, are not eligible for membership in employer-sponsored pension plans. The next biennial publication of *Pension Plans in Canada*, Cat. 74-401, will be in 1991.

Among the highlights of the report:

- at the beginning of 1989, there were almost five million Canadian workers participating in over 20 thousand employer-sponsored pension plans. This represents an increase in membership of nearly 3% from 1988 and 11% from 1980;
- from 1980 to 1989, the number of female members rose 36%. Women accounted for 38% of all plan members in 1989, up substantially from 31% recorded in 1980;
- the percentage of employed paid workers belonging to employer-sponsored pension plans remained virtually unchanged at 45% between 1988 and 1989;
- the number of pension plans decreased by almost 5% from 1988. The principal change was in plans with fewer than five members, which in 1989 constituted 36% of all plans but covered less than 1% of the total membership. These plans, primarily for executives and significant shareholders, declined by more than 10% from 1988, after more than doubling between 1980 and 1986;

- public sector plans, which numbered 914 in 1989, accounted for only 4.5% of all employer-sponsored pension plans but covered 45% of all participants. The coverage rate for employed paid workers in the private sector was 31% (21% for females and 39% for males) compared with virtually 100% coverage in the public sector.

Detailed data on the 20,250 plans are available from the Pensions Section, Labour Division. For further information, contact Johanne Pineau at (613) 951-4034. □

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Perspectives on Labour and Income

The quarterly for labour market information

Key labour and income facts

The following selection of labour and income indicators is drawn from 11 sources and includes published and unpublished annual data. The first 53 indicators appear in every issue and the remainder address a different topic each time.

The latest available annual data are always shown; as results become available, the indicators are updated so that every issue contains new data. An indicator updated since the last issue is "flagged" with an asterisk.

Data sources

The indicators are derived from the following sources:

- | | |
|-----------|---|
| 1-11 & 15 | Labour Force Survey
Frequency: Monthly
Contact: Ken Bennett (613) 951-4720 |
| 12-14 | Labour Market Activity Survey
Frequency: Annual
Contact: Richard Veevers (613) 951-4617 |
| 16 | Absence from Work Survey
Frequency: Annual
Contact: Denis Lefebvre (613) 951-4600 |
| 17 | Workers' Compensation Statistics
Frequency: Annual
Contact: Joanne Proulx (613) 951-4040 |
| 18 | Help-wanted Index
Frequency: Monthly
Contact: André Picard (613) 951-4045 |
| 19-21 | Unemployment Insurance Statistics
Frequency: Monthly
Contact: André Picard (613) 951-4045 |
| 22-29 | Survey of Employment, Payrolls and Hours
Frequency: Monthly
Contact: Howard Krebs (613) 951-4063 |

- | | |
|-------|---|
| 30-32 | Labour Canada, Major Wage Settlements
Frequency: Quarterly
Contact: Gilles Léger (819) 953-4234 |
| 33-35 | Labour Income (Revenue Canada Taxation-based statistics, Survey of Employment, Payrolls and Hours and other surveys)
Frequency: Quarterly
Contact: Ed Bunko (613) 951-4048 |
| 36-46 | Survey of Consumer Finances
Frequency: Annual
Contact: Kevin Bishop (613) 951-2211 |
| 47-53 | Household Facilities and Equipment Survey
Frequency: Annual
Contact: Penny Barclay (613) 951-4634 |
| 54 | Survey of Employment, Payrolls and Hours
Frequency: Monthly
Contact: Howard Krebs (613) 951-4063 |

Notes on the method of deriving certain indicators are given at the end of the table.

Additional data

The table provides at the most two years of data for each indicator. A longer time series (generally ten years) for this set of indicators can be obtained on request on paper or diskette at a cost of \$50. (A more extensive explanation of the indicators is also available.) This ten-year data set will be updated annually in April. Contact: Gilles Myre (613) 951-4627.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Labour market							
1 Labour force	'000	1988	13,275	231	62	408	318
		1989	13,503	238	63	414	325
Change	%		1.7	3.2	2.6	1.4	2.1
2 Participation rate	%	1988	66.7	54.6	64.0	60.8	58.8
		1989	67.0	55.7	65.0	61.2	59.5
3 Employed	'000	1988	12,245	193	54	366	280
		1989	12,486	201	54	373	284
Change	%		2.0	4.0	—	1.8	1.6
4 Proportion of employed working part-time	%	1988	15.4	11.2	15.0	15.5	15.4
		1989	15.1	11.5	15.7	16.0	14.9
5 Proportion of part-timers wanting full-time work	%	1988	23.7	58.8	34.5	35.5	36.4
		1989	22.2	55.1	36.1	31.5	37.5
6 Unemployed	'000	1988	1,031	38	8	42	38
		1989	1,018	38	9	41	41
Change	%		-1.3	—	11.4	-1.8	6.1
7 Official unemployment rate	%	1988	7.8	16.4	13.0	10.2	12.0
		1989	7.5	15.8	14.1	9.9	12.5
Alternative measures of unemployment							
8 Unemployed 14 or more weeks as a proportion of the labour force	%	1988	3.1	7.7	5.2	4.2	4.8
		1989	2.9	6.8	5.3	3.8	4.9
9 Unemployment rate:							
— of persons heading families with children under age 16	%	1988	6.9	15.8	13.7	9.6	11.2
		1989	6.8	15.6	14.2	9.2	11.8
— excluding full-time students	%	1988	7.6	16.6	13.4	10.0	11.9
		1989	7.4	15.8	14.6	9.8	12.4
— including full-time members of the Canadian Armed Forces	%	1988	7.7	16.4	12.8	9.9	11.8
		1989	7.5	15.7	13.9	9.6	12.3
— of the full-time labour force	%	1988	9.4	19.3	16.0	12.7	14.6
		1989	9.0	18.6	17.4	12.1	15.0
— of the part-time labour force	%	1988	9.8	17.1	7.2	12.8	13.2
		1989	9.7	15.8	8.2	12.3	14.4
— including persons on the margins of the labour force	%	1988	8.5	20.2	15.0	11.1	14.0
		1989	8.2	18.9	16.1	10.8	14.1
10 Underutilization rate based on hours lost through unemployment and underemployment	%	1988	9.9	20.1	16.5	13.4	15.2
		1989	9.5	19.3	17.8	12.8	15.6
11 Proportion unemployed 6 months or longer	%	1988	20.2	23.9	16.2	21.0	19.9
		1989	20.1	21.3	14.1	18.0	19.2

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
3,311	5,118	535	488	1,290	1,514	..	..	1988	'000	1
3,343	5,214	538	482	1,308	1,578	..	..	1989	%	
0.9	1.9	0.6	-1.1	1.4	4.2	..	..	
64.0	69.6	66.7	66.4	72.4	65.7	..	..	1988	%	2
64.0	69.8	67.0	66.2	72.4	66.8	..	..	1989		
3,001	4,862	494	451	1,187	1,358	..	..	1988	'000	3
3,031	4,949	498	446	1,214	1,435	..	..	1989	%	
1.0	1.8	0.9	-1.1	2.3	5.7	..	..	
13.6	15.6	16.9	17.1	15.5	17.9	..	..	1988	%	4
13.5	15.5	17.2	16.6	15.3	16.2	..	..	1989		
32.6	15.3	21.7	26.5	20.4	28.6	..	..	1988	%	5
31.8	13.5	21.9	27.9	19.3	25.8	..	..	1989		
311	256	42	37	103	157	..	..	1988	'000	6
311	264	41	36	94	144	..	..	1989	%	
-	3.2	-2.5	-2.1	-8.9	-8.3	..	..	
9.4	5.0	7.8	7.5	8.0	10.3	..	..	1988	%	7
9.3	5.1	7.5	7.4	7.2	9.1	..	..	1989		
4.4	1.5	2.9	3.1	3.0	4.4	..	..	1988	%	8
4.3	1.5	3.0	3.1	2.5	3.6	..	..	1989		
										9
8.1	4.4	6.2	6.5	7.3	9.4	..	..	1988	%	
7.8	4.7	6.0	7.4	6.5	8.3	..	..	1989		
9.3	4.7	7.5	7.4	7.8	10.3	..	..	1988	%	
9.3	4.9	7.3	7.3	7.0	8.9	..	..	1989		
9.4	5.0	7.7	7.5	7.9	10.3	..	..	1988	%	
9.3	5.0	7.5	7.4	7.1	9.0	..	..	1989		
11.5	5.8	9.2	9.6	9.2	12.8	..	..	1988	%	
11.3	5.8	9.2	9.6	8.3	10.8	..	..	1989		
10.6	8.2	10.9	9.4	11.2	11.2	..	..	1988	%	
10.7	8.0	9.8	9.7	9.9	12.3	..	..	1989		
10.6	5.3	8.3	8.0	8.3	10.8	..	..	1988	%	
10.5	5.3	8.0	8.0	7.5	9.5	..	..	1989		
11.9	6.3	9.9	10.2	9.8	13.3	..	..	1988	%	10
11.7	6.2	9.7	10.2	8.9	11.3	..	..	1989		
25.7	12.7	16.6	20.8	19.0	22.0	..	..	1988	%	11
27.0	13.2	20.6	20.4	17.4	20.6	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.	
Other labour market indicators									
*12	Employed at some time in the year, male, age 16 to 69	'000	1986	7,560	151	36	235	191	
	– as proportion of male population age 16 to 69	%		87.4	80.7	87.8	82.7	82.0	
		'000	1987	7,584	152	36	235	191	
		%		86.5	80.9	87.8	82.2	81.6	
	Employed at some time in the year, female, age 16 to 69	'000	1986	5,987	109	29	187	149	
	– as proportion of female population age 16 to 69	%		67.4	58.0	69.0	62.1	61.8	
		'000	1987	6,042	110	30	191	153	
		%		67.1	57.9	71.4	63.0	63.0	
	*13	Unemployed at some time in the year, male, age 16 to 69	'000	1986	1,601	63	11	63	56
		– as proportion of male population age 16 to 69	%		18.5	33.7	26.8	22.2	24.0
		'000	1987	1,497	59	11	59	59	
		%		17.1	31.4	26.8	20.6	25.2	
Unemployed at some time in the year, female, age 16 to 69		'000	1986	1,441	45	9	58	46	
– as proportion of female population age 16 to 69		%		16.2	23.9	21.4	19.3	19.1	
		'000	1987	1,345	46	9	55	48	
		%		14.9	24.2	21.4	18.2	19.8	
*14		Full-time, full-year male paid workers	'000	1986	4,039	53	14	117	90
				1987	4,035	55	14	115	89
	Full-time, full-year female paid workers	'000	1986	2,468	35	10	71	53	
			1987	2,528	36	11	74	52	
	15	Days lost per full-time worker per year through illness or for personal reasons	days	1988	9.2	9.1	6.7	8.6	8.7
				1989	9.4	9.6	8.1	8.6	9.6
16	Proportion of paid workers absent two or more consecutive weeks because of illness or accident	%	1987	6.3	4.4	5.1	6.1	6.4	
			1988	6.4	5.1	5.7	4.7	6.0	
17	Workers receiving workers' compensation for time-loss injuries	'000	1987	603	9	2	12	11	
			1988	618	10	2	11	12	
	Change	%		2.6	11.3	17.7	-4.4	11.0	
*18	Help-wanted index (1981 = 100)		1988	149	180				
			1989	152	196				

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
1,928	2,850	306	289	733	843	..	..	1986	'000	12
84.5	90.0	89.0	90.0	90.4	85.6	..	..		%
1,921	2,886	305	280	718	859	..	..	1987	'000	
83.5	89.2	88.2	87.5	88.3	85.6	..	..		%
1,434	2,331	256	229	601	661	..	..	1986	'000	
60.6	71.4	72.1	71.6	74.9	65.8	..	..		%
1,434	2,367	264	219	592	682	..	..	1987	'000	
60.2	71.2	72.7	68.7	73.4	66.7	..	..		%
459	457	58	50	167	217	..	..	1986	'000	13
20.1	14.4	16.9	15.6	20.6	22.0	..	..		%
434	432	57	42	150	193	..	..	1987	'000	
18.9	13.3	16.5	13.1	18.5	19.2	..	..		%
377	482	49	44	139	192	..	..	1986	'000	
15.9	14.8	13.8	13.8	17.3	19.1	..	..		%
375	424	51	40	127	171	..	..	1987	'000	
15.7	12.8	14.0	12.5	15.7	16.7	..	..		%
1,013	1,682	154	130	370	416	..	..	1986	'000	14
1,028	1,666	148	128	370	423	..	..	1987		
632	998	109	80	237	242	..	..	1986	'000	
610	1,052	107	81	239	265	..	..	1987		
9.5	9.7	9.7	7.5	8.3	7.7	..	..	1988	days	15
10.2	9.6	8.8	8.6	8.2	8.4	..	..	1989		
7.4	6.1	6.0	4.0	5.9	6.2	..	..	1987	%	16
8.1	6.2	6.2	5.2	5.5	5.5	..	..	1988		
217	205	23	16	41	66	..	1	1987	'000	17
218	208	23	15	43	73	..	1	1988		
0.6	1.6	0.5	-5.3	5.1	10.9	..	19.0		%	
172	180	82			96	..	..	1988		18
173	167	90			128	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Unemployment insurance								
19	Total beneficiaries	'000	1987	1,033	68	13	51	57
			1988	1,015	71	13	50	57
	Change	%		-1.8	5.2	0.7	-2.0	0.9
20	Total beneficiaries as a proportion of contributors	%	1987	8.2	28.4	22.0	13.0	17.9
			1988	7.9	28.7	21.2	12.4	17.6
21	Regular beneficiaries without reported earnings	'000	1987	800	55	10	40	46
			1988	780	58	10	38	47
	Change	%		-2.5	5.2	0.1	-2.8	1.6
Earnings (including overtime) and hours								
*22	Average weekly earnings in current dollars	\$	1988	463.80	443.99	379.26	417.92	421.16
			1989	486.87	465.80	400.82	432.86	442.80
	Change	%		5.0	4.9	5.7	3.6	5.1
*23	Average weekly earnings in 1981 dollars	\$	1988	322.53	320.57	278.05	298.09	298.27
			1989	322.43	324.83	283.06	295.47	299.59
	Change	%		--	1.3	1.8	-0.9	0.4
*24	Average weekly earnings of salaried employees in current dollars	\$	1988	568.12	524.26	493.20	516.66	523.26
			1989	598.87	559.86	522.94	537.24	552.16
	Change	%		5.4	6.8	6.0	4.0	5.5
*25	Average weekly earnings of salaried employees in 1981 dollars	\$	1988	395.08	378.53	361.58	368.52	370.58
			1989	396.60	390.42	369.31	366.72	373.59
	Change	%		0.4	3.1	2.1	-0.5	0.8
*26	Average weekly earnings of hourly paid employees in current dollars	\$	1988	370.41	353.66	256.22	330.64	342.13
			1989	388.20	363.16	264.60	341.66	362.48
	Change	%		4.8	2.7	3.3	3.3	6.0
*27	Average weekly earnings of hourly paid employees in 1981 dollars	\$	1988	257.59	255.35	187.84	235.83	242.30
			1989	257.09	253.25	186.86	233.22	245.25
	Change	%		-0.2	-0.8	-0.5	-1.1	1.2
*28	Average weekly hours of hourly paid employees	hrs	1988	32.1	35.5	32.6	33.0	34.0
			1989	31.8	34.8	31.7	32.7	34.1
29	Average weekly overtime hours of hourly paid employees	hrs	1988	1.1	1.7	0.5	0.7	0.9
			1989	1.2	1.6	0.4	0.8	1.0
Major wage settlements								
*30	Number of agreements		1988	543	8	2	7	12
			1989	438	7	4	15	5
*31	Number of employees	'000	1988	1,192	22	5	5	14
			1989	983	11	3	19	12
*32	Increase in base rate on annual basis	%	1988	4.4	4.1	4.8	5.1	4.1
			1989	5.3	5.7	4.7	5.5	4.5

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
316	231	33	29	90	142	2	2	1987	'000	19
323	216	35	29	78	139	2	2	1988		
2.2	-6.4	3.7	0.2	-12.9	-2.3	-2.9	-10.8		%	
10.2	4.6	6.8	7.8	7.7	10.6	10.5	5.4	1987	%	20
10.2	4.2	7.1	7.5	6.5	9.9	9.8	4.8	1988		
252	166	25	22	70	111	1	1	1987	'000	21
259	151	26	22	60	106	1	1	1988		
2.5	-9.0	3.2	-1.1	-14.1	-3.9	-3.8	-13.6		%	
454.01	482.67	422.05	411.30	462.76	466.52	556.24	621.30	1988	\$	22
472.82	509.08	445.08	425.99	484.47	491.63	585.91	663.86	1989		
4.1	5.5	5.5	3.6	4.7	5.4	5.3	6.9		%	
313.11	327.46	297.01	291.91	338.27	339.78	..	..	1988	\$	23
312.71	326.33	299.11	289.59	339.98	342.60	..	..	1989		
-0.1	-0.3	0.7	-0.8	0.5	0.8	..	..		%
540.82	595.75	536.17	527.58	585.04	564.90	666.78	695.96	1988	\$	24
564.69	631.12	562.52	558.45	617.83	594.35	713.95	728.63	1989		
4.4	5.9	4.9	5.9	5.6	5.2	7.1	4.7		%	
372.98	404.17	377.32	374.44	427.66	411.43	..	..	1988	\$	25
373.47	404.56	378.04	379.64	433.56	414.18	..	..	1989		
0.1	0.1	0.2	1.4	1.4	0.7	..	..		%
372.12	384.66	321.24	301.31	340.60	390.19	437.86	521.88	1988	\$	26
387.87	403.25	345.85	309.83	356.00	412.73	439.74	568.71	1989		
4.2	4.8	7.7	2.8	4.5	5.8	0.4	9.0		%	
256.63	260.96	226.07	213.85	248.98	284.19	..	..	1988	\$	27
256.53	258.49	232.43	210.63	249.82	287.62	..	..	1989		
--	-0.9	2.8	-1.5	0.3	1.2	..	..		%
32.8	32.5	30.7	28.7	30.8	30.2	32.9	33.3	1988	hrs	28
32.6	32.0	31.2	28.8	30.5	30.5	32.1	33.8	1989		
1.0	1.3	0.8	0.8	1.4	0.9	2.8	4.9	1988	hrs	29
1.0	1.3	0.9	0.8	1.5	1.1	1.9	3.4	1989		
70	187	38	16	60	67	..	..	1988		30
37	155	7	16	51	49	..	..	1989		
204	323	66	62	132	145	..	..	1988	'000	31
209	237	10	21	83	106	..	..	1989		
4.3	5.3	3.7	2.6	3.1	5.2	..	..	1988	%	32
5.3	6.4	4.6	2.9	3.9	7.0	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Labour income								
33	Labour income in current dollars	\$ million	1987	296.0	3.9	0.9	7.3	5.7
			1988	322.7	4.2	0.9	7.9	6.1
	Change	%		9.0	8.0	8.4	7.6	7.7
34	Labour income per employee in current dollars	\$	1987	28,500	24,700	20,200	23,800	23,600
			1988	30,100	24,800	21,200	24,500	24,600
	Change	%		5.5	0.6	4.9	2.9	4.1
35	Labour income per employee in 1981 dollars	\$	1987	20,600	18,300	15,400	17,600	17,300
			1988	20,900	17,900	15,600	17,500	17,400
	Change	%		1.4	-1.8	1.1	-0.7	0.5
36	Net income from self-employment as a proportion of money income	%	1986	6.0	5.7	8.6	6.2	5.4
			1987	6.7	4.9	12.4	6.6	4.3
Earnings of full-time, full-year workers								
37	Average earnings of men working full-time, full-year	\$	1987	31,900	27,700	25,200	30,300	27,600
			1988	33,600	27,200	23,600	30,500	29,100
	Change	%		5.3	9.0	-6.3	0.5	5.3
38	Average earnings of women working full-time, full-year	\$	1987	21,000	17,900	17,900	18,500	18,100
			1988	21,900	20,400	16,900	19,600	20,200
	Change	%		4.3	14.3	-5.5	6.1	11.6
39	Ratio of female to male earnings	%	1987	65.9	64.5	71.1	61.0	65.6
			1988	65.3	75.1	71.7	64.4	69.5
Family income								
40	Average family income	\$	1987	43,600	33,700	34,800	38,100	35,200
			1988	46,200	36,100	34,500	39,700	37,300
41	Median family income	\$	1987	38,900	29,800	30,900	34,300	31,800
			1988	41,200	32,900	30,700	36,400	33,300
42	Average income of unattached individuals	\$	1987	18,700	14,600	13,800	15,900	13,700
			1988	19,600	17,000	14,400	16,000	16,100
43	Median income of unattached individuals	\$	1987	14,400	10,000	10,600	11,600	10,500
			1988	15,000	12,900	12,000	11,300	12,100

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
72.9	126.4	10.8	8.2	27.0	31.8	1.1		1987	\$ million	33
79.5	139.0	11.5	8.6	29.3	34.5	1.2		1988		
9.2	10.0	6.5	4.5	8.2	8.4	9.1				
28,300	30,200	26,100	24,200	27,300	28,100	1987	\$	34
29,900	32,100	27,500	24,800	28,900	29,100	..	..	1988	
5.8	6.3	5.5	5.8	5.8	3.6	..	..		%
20,200	21,500	19,100	17,900	20,500	21,200	1987	\$	35
20,600	21,800	19,400	17,600	21,100	21,200	..	..	1988	
2.0	1.5	1.3	-1.6	3.0	--	..	..		%
5.2	5.7	6.9	12.3	5.7	6.6	1986	%	36
5.8	6.2	7.6	13.4	7.9	7.3	..	..	1987	
30,700	33,600	27,900	27,000	32,000	32,900	1987	\$	37
31,700	35,900	29,700	28,400	33,800	34,500	..	..	1988	
3.4	6.8	6.5	5.2	5.6	4.8	..	..		%
20,500	22,000	19,200	17,900	20,800	21,900	1987	\$	38
20,900	23,300	20,200	19,200	22,100	21,300	..	..	1988	
2.1	5.8	5.4	7.1	6.0	-2.8	..	..		%
66.8	65.4	68.6	66.3	65.1	66.7	1987	%	39
65.9	64.8	67.9	67.5	65.3	61.8	..	..	1988	
40,100	49,000	39,700	39,100	44,400	42,600	1987	\$	40
41,300	52,800	43,100	40,400	46,300	45,300	..	..	1988	
35,500	43,800	35,800	35,100	40,000	38,000	1987	\$	41
36,900	47,300	37,400	35,400	41,700	42,000	..	..	1988	
17,100	20,700	16,900	16,600	19,200	18,900	1987	\$	42
17,400	21,700	17,100	17,100	20,500	21,000	..	..	1988	
12,600	16,200	12,500	12,900	15,000	15,900	1987	\$	43
12,100	17,400	13,800	13,200	15,700	17,300	..	..	1988	

See notes at end of table.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
44	Proportion below the low income cut-off (1978 base):						
- families	%	1987 1988	11.3 10.5	18.9 15.5	10.0 10.0	11.7 10.8	14.4 12.6
- unattached individuals	%	1987 1988	33.5 33.1	45.3 35.5	32.9 33.2	37.7 39.4	45.6 35.7
- persons (population)	%	1987 1988	14.1 13.1	20.8 16.7	12.9 12.3	14.7 13.4	16.9 14.5
- children (less than 16 years)	%	1987 1988	16.9 15.4	25.9 20.7	16.1 12.6	16.8 15.2	20.5 18.3
- elderly (65 years and over)	%	1987 1988	17.3 17.2	20.4 19.2	12.3 17.5	15.8 16.9	18.2 15.0
*45 Average family taxes	\$	1987 1988	8,100 8,600	5,100 5,100	5,000 4,700	6,600 6,700	5,500 5,800
*46 Average family income after tax	\$	1987 1988	35,500 37,600	28,600 30,900	29,800 29,800	31,600 33,000	29,700 31,500
Households and dwellings							
47 Average household income	\$	1987 1988	38,500 40,700	31,700 34,200	31,300 31,100	34,100 35,400	31,900 34,300
48	Proportion of households with:						
- VCRs	%	1988 1989	52.0 58.8	50.0 59.9	43.2 50.0	51.8 62.1	51.3 57.0
- microwaves	%	1988 1989	53.8 63.4	34.3 52.1	45.5 47.7	48.5 62.5	48.3 59.9
- two or more automobiles	%	1988 1989	25.1 25.0	14.5 12.6	22.7 22.7	18.4 21.0	20.6 18.6
- vans and trucks	%	1988 1989	24.3 25.5	31.3 32.3	31.8 31.8	25.6 28.2	34.9 34.3
- air conditioners	%	1988 1989	20.8 24.6	... ...	-- ...	3.6 2.6	4.6 5.8
49 Proportion of owner-occupied dwellings	%	1988 1989	62.5 63.3	77.1 79.6	75.0 75.0	70.9 71.5	76.5 75.2
50 Proportion of all owner-occupied dwellings that are mortgage-free	%	1988 1989	50.0 50.6	72.7 69.9	54.5 54.5	56.2 56.6	56.0 59.3
51 Number of occupied dwellings in need of repair	'000	1988 1989	2,469 2,369	56 52	14 14	110 94	75 79

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
44										
13.9	7.8	11.9	12.4	12.7	13.0	..	..	1987	%	
13.5	7.5	11.1	13.6	10.7	10.1	..	..	1988		
40.7	28.5	35.9	33.4	31.5	31.2	..	..	1987	%	
42.7	26.9	33.5	29.3	30.8	30.6	..	..	1988		
16.8	10.3	15.9	15.9	15.6	15.7	..	..	1987	%	
16.8	9.5	14.8	16.8	13.8	13.2	..	..	1988		
19.0	12.3	21.9	18.9	19.9	18.6	..	..	1987	%	
17.2	11.9	19.7	22.6	16.9	15.2	..	..	1988		
25.2	12.7	15.4	13.9	13.8	19.9	..	..	1987	%	
25.2	12.6	16.0	13.4	15.6	18.4	..	..	1988		
7,700	9,300	6,700	6,500	8,400	7,800	..	..	1987	\$	45
7,900	10,100	7,700	7,000	8,300	8,100	..	..	1988		
32,400	39,700	34,500	33,000	32,600	36,000	..	..	1987	\$	46
33,500	42,700	35,400	33,300	38,000	37,200	..	..	1988		
35,600	43,400	34,300	33,800	38,900	37,000	..	..	1987	\$	47
36,000	46,900	37,000	35,100	41,200	39,100	..	..	1988		
48										
49.0	54.2	49.7	47.2	58.0	50.7	..	..	1988	%	
54.4	62.1	56.7	53.4	64.0	57.3	..	..	1989		
49.0	54.6	55.3	64.0	64.9	55.0	..	..	1988	%	
59.6	64.5	65.8	71.2	71.8	62.2	..	..	1989		
21.7	28.3	22.6	24.3	30.1	24.7	..	..	1988	%	
19.9	29.3	21.9	24.6	29.4	25.7	..	..	1989		
14.6	20.1	31.1	45.3	40.4	32.4	..	..	1988	%	
15.6	21.7	32.1	44.1	41.6	34.0	..	..	1989		
13.1	35.6	39.5	27.7	7.8	6.9	..	..	1988	%	
14.7	43.8	43.9	31.0	8.6	7.4	..	..	1989		
55.3	63.2	66.1	70.9	63.9	63.0	..	..	1988	%	49
54.8	64.6	67.4	71.8	64.6	65.2	..	..	1989		
44.1	50.4	55.8	57.5	47.2	49.7	..	..	1988	%	50
46.9	49.4	55.4	61.1	48.3	50.2	..	..	1989		
565	930	122	100	218	279	..	..	1988	'000	51
572	817	113	101	238	287	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
52	Dwellings in need of repair as a proportion of all occupied dwellings	%	1988 1989	26.7 25.0	33.7 31.1	31.8 31.8	35.6 30.4	31.5 32.6
*53	Median rent-to-income ratio	%	1988 1989	21 21	18 17	22 23	23 21	22 19
54	Average weekly earnings by major industries							
-	Forestry	\$	1989	637.90	583.17	x	411.52	531.97
-	Mines, quarries and oil wells	\$	1989	821.59	766.28	x	645.18	706.25
-	Manufacturing	\$	1989	572.93	488.75	368.00	499.84	525.23
-	Construction	\$	1989	598.55	553.59	414.70	523.82	539.40
-	Transportation, communication and other utilities	\$	1989	621.06	555.56	507.76	575.93	582.27
-	Trade	\$	1989	357.54	305.38	283.15	301.34	300.90
-	Finance, insurance and real estate	\$	1989	531.93	452.50	450.39	457.10	437.10
-	Community, business and personal services	\$	1989	409.57	466.10	370.45	381.32	380.41
-	Public administration	\$	1989	621.57	539.80	576.66	577.45	577.31

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
23.4	27.8	32.1	27.9	25.7	24.4	..	..	1988	%	52
22.8	24.0	29.5	28.2	27.5	24.1	..	..	1989		
20	20	23	23	22	23	..	..	1988	%	53
20	21	21	22	21	22	..	..	1989		
										54
570.86	698.96	572.18	518.48	597.79	707.94	x	603.04	1989	\$	
724.68	804.78	840.65	709.44	877.69	836.57	x	x	1989	\$	
537.05	598.97	478.21	525.33	569.15	617.11	x	x	1989	\$	
615.96	619.87	555.87	469.64	584.00	574.89	636.45	640.82	1989	\$	
624.43	629.51	613.14	584.09	611.77	637.93	692.79	759.04	1989	\$	
346.33	373.70	328.57	323.41	357.98	380.05	422.67	347.16	1989	\$	
483.62	584.15	451.69	456.77	485.79	536.31	618.43	613.92	1989	\$	
409.71	427.87	375.29	359.84	390.31	394.28	450.39	583.65	1989	\$	
619.40	647.36	626.45	571.68	593.96	623.87	699.60	714.84	1989	\$	

Key labour and income facts

Notes and definitions

No.

- 1 Persons aged 15 and over who are employed or unemployed.
- 2 Labour force as a proportion of the population aged 15 and over.
- 4 Persons who usually work less than 30 hours per week.
- 7 Unemployed as a proportion of the labour force.
- 8 This rate, and rates shown as Indicators 9 and 10, are described in *The Labour Force* (71-001), February 1987.
- 9 The full-time labour force includes persons working full-time, those working part-time involuntarily and unemployed persons seeking full-time work.

The part-time labour force includes persons working part-time voluntarily and unemployed persons seeking part-time work.

On the margins of the labour force includes persons not looking for work because they believe none is available or because they are waiting for recall or for replies from employers.

No.

- 10 The rate shows hours lost through unemployment (unemployed multiplied by average actual weekly hours) and through underemployment (that is, short-time work schedules and involuntary part-time employment) as a proportion of hours worked plus hours lost.
- 30 Data are for agreements involving bargaining units of 500 or more employees. Canada figures include workers covered by federal labour legislation plus agreements involving workers in more than one province.
- 33 Labour income comprises gross wages and salaries (including directors' fees, bonuses, commissions, gratuities, taxable allowances and retroactive pay) and supplementary labour income (payments made by employers for the benefit of employees, including contributions to health and welfare schemes, pension plans, workers' compensation and unemployment insurance).
- 34 Labour income per employee is calculated using LFS estimates of paid workers excluding those absent without pay.
- 44 For an explanation of the methodology underlying the low income cut-off, see *Income Distributions by Size in Canada* (13-207).

In the works

Here are some of the topics to be featured in upcoming issues of Perspectives on Labour and Income:

■ **Jobs and the environment**

Can a balance be struck between labour market growth and environmental concerns? A look at jobs provided by industries that have a high impact on the environment.

■ **International labour force comparisons**

A review of changes in the labour forces of the seven major OECD countries over the past twenty years, focusing on the increased participation of women.

■ **Registered Retirement Savings Plan contributors**

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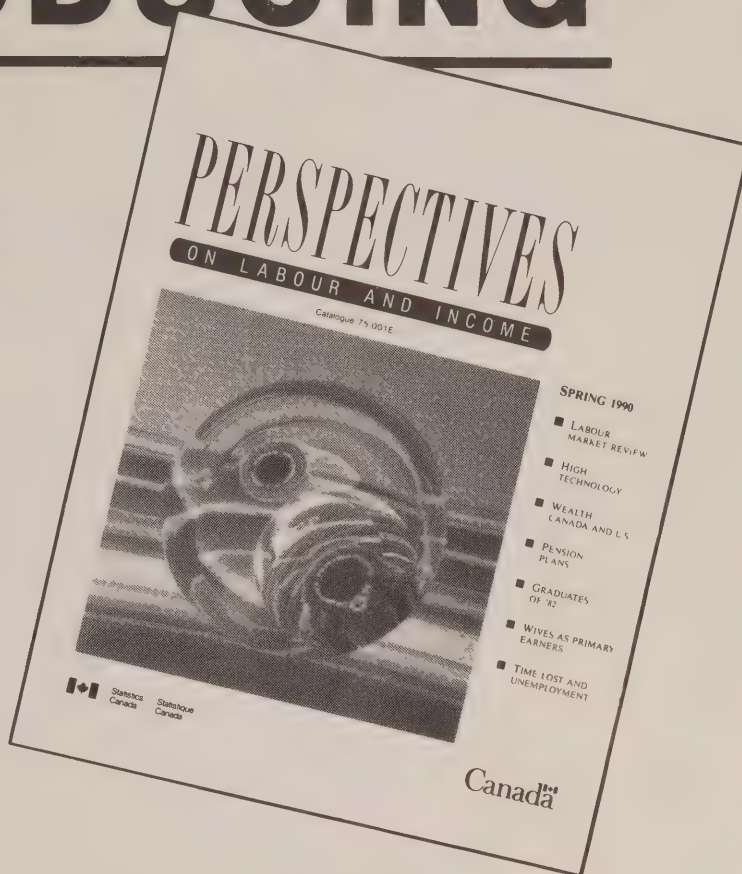
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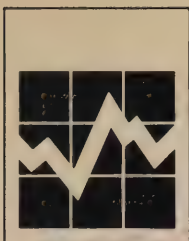
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Symbols

The following standard symbols are used in Statistics Canada publications:

- .. figures not available
- ... figures not appropriate or not applicable
- nil or zero
- amount too small to be expressed
- P preliminary figures
- r revised figures
- X confidential to meet secrecy requirements of the Statistics Act

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Forum

From the editor

■ A quick glance at any newspaper or magazine should be enough to convince even the casual observer that training and education are the hot business topics of the moment. In this issue, *Perspectives* contributes to the debate with two articles.

Training, and more particularly the acquisition of skills necessary to improve productivity, arguably has become the most important issue in contemporary Canadian labour markets. Statistics Canada is responding vigorously to the growing priority for information demanded by the business community: a number of surveys, some sponsored by Employment and Immigration Canada, are going into the field shortly – Adult Education and Training, the 1990 Labour Market Activity Survey, Follow-up of 1986 Graduates – and several more are in the planning stage; and results from surveys already held are becoming available (see "Sources").

Despite these efforts, as statisticians we are keenly aware of the challenges we face in trying to fill the gaps in our data profile of skills acquisition. Some of these difficulties may well be insurmountable; others require ingenuity or resources we have not yet discovered.

We know what people study in the classroom; we also know from personal experience that what we learn there is often lost to easy recall within several years of our entering "the real world". And yet there is no doubt that the higher a worker's educa-

tion, the more "desirable" that employee is. (We have indirect measures of this – university graduates have higher incomes, lower levels of unemployment, longer job tenure, and so forth, than those without a university degree.)

So statistics do show that the educated acquire a value far beyond being repositories of facts, and that education must transmit something other than simple information. But what this "something" might be lies in a realm inhospitable to statistics: we can, and do, collect data on the inputs to the process – attendance records and certificates granted, teachers hired and professors paid. But we do not collect data on how a person's capacity to work productively in the labour market is affected by his/her acquisition of an education. Nor is it at all clear that we can.

A different aspect of the value conferred by education is experience. Much of an employee's training is actually practice in doing the job itself, and practice is exceptionally difficult to measure because it is both training and working simultaneously. An apprentice carpenter helps construct buildings and a surgical resident helps perform life-saving operations, even though both are, strictly speaking, learners.

Another difficulty arises not from the inability to segregate cause from effect, but from the simple fact that information about employer-sponsored training must come from employers. However, as we have learned in the past, this is often difficult to come by. Who in the company keeps the

records on employee training, if indeed records are kept at all? If the company has more than one location, are the records kept in one central file at the head office, or does each branch keep records independently? Under such circumstances, it is difficult for a statistical agency to know precisely which company officer should be approached for this information. When we do not know, response rates tend to be poor and data quality is often difficult to assure.

Even if these difficulties disappeared overnight, developing a statistical profile of trainees remains problematical. Company records do not carry the kind of socio-demographic information – age, education, work history – critical to public policy planners and others responsible for developing training programs. For this, we must rely on household surveys, which present their own set of problems. The first is that household surveys generally rely on proxy reporting, that is, one member of the household speaks for all its occupants. Since the proxy may not be fully conversant with the activities of the others, he or she is likely to provide a "best guess" answer to many of the interviewer's detailed questions. Furthermore, a respondent may not identify training as "training", especially if it takes place on the job; perhaps he or she considers it to be a transfer to a new position, or a temporary fill-in job. And even if the employee can distinguish one from the other, it is certain that he or she will not be able to estimate the cost of such training to the employer. Despite these drawbacks, household surveys remain the traditional method of obtaining data on socio-demographic characteristics that are required for the formulation of national education and training strategies.

Leaving aside these problems, which may never be totally overcome, several intriguing opportunities for the collection of new types of training data arise if we consider the response that businesses may have to the mounting concern about literacy

in the workplace. Subjecting schoolchildren to province-wide exams is being debated with distaste in educational circles, but it is not beyond the realm of possibility that testing might quietly be introduced in the business world. Since their money will be invested in the project, employers may feel fully entitled to test their employees' aptitude for training before expending resources on them (as is done now in the federal public service, to determine if unilingual civil servants are capable of learning the other official language). Employees could be asked to take a test upon returning from training to provide a measure of its success; companies could even test their workers, or potential workers, to see if they have sufficient knowledge and learning skills to benefit from training.

Such developments could open up new avenues for survey research. If companies were encouraged to use standardized tests, and surely some entrepreneurial soul would see a business opportunity in providing just that, then we face the possibility of having access to test scores that would be comparable across employers. These would tell us what all of us – businesses, program developers, statisticians – really want to know: a measurement of the skills that people actually acquire when they undergo training.

Ian Macredie
Editor-in-Chief



Letters

■ Re. "Trading Places" (Summer 1990):

As a woman who has worked in "non-trad" for more than a decade, I looked forward to reading this article. Unfortunately, I was disappointed. It attributes such great importance to a small number of

women that it does not provide an adequate overview of the topic.

After remarking on the tremendous growth in women's participation in the labour force, the author moves on to examine education as a factor explaining this growth. And this is where the trouble starts. Women's gains at universities may be remarkable but such graduates still represent only one in ten working women (and only slightly more than one in ten working men, according to the author's own figures); she ignores the fact that four times as many women have other postsecondary qualifications.

The author's neglect of academic credentials other than a university degree is puzzling, since it is apparent that few of the top 21 jobs she identifies as having the greatest influx of women require a degree. At least three-quarters of them, especially the managerial and sales positions, can be attained by promotion through the ranks or completion of a college diploma. And several of the top 21 – bartenders and bus drivers being the most obvious – are jobs that provide the kind of unskilled part-time work that suits many women with families.

Yet despite the data, the author seems solely concerned with a small number of elite women in an elite group on the fast-track to elite jobs. She rejoices in their achievements, and so do I, but the fact is that given the topsy-turvy growth of professional and managerial jobs in the past decade, it would have been more remarkable if they had failed to make such inroads. What deserves

greater rejoicing is that women without such privileged backgrounds have also succeeded in breaking into some higher-paying occupations, even though they are less glamorous.

Within the confines of the narrow scope the author has chosen, the results are quite interesting. But I had expected a broader analytical vision from Statistics Canada.

Shannon Lee Mannion
Ottawa



We welcome your views on articles and other items that have appeared in *Perspectives on Labour and Income*. Additional insights on the data are also welcome, but to be considered for publication, communications should be factual and analytical. We encourage readers to inform us about their current research projects, new publications, data sources and upcoming events relating to labour and income.

Statistics Canada reserves the right to select and edit items for publication. Correspondence, in either official language, should be addressed to: Susan Crompton, Forum and Sources Editor, *Perspectives on Labour and Income*, 5-A Jean Talon Building, Statistics Canada, Ottawa, K1A 0T6, or call (613) 951-0178.

Highlights

Here are some key findings from the articles in this issue of Perspectives on Labour and Income.

RRSPs: Tax-assisted retirement savings

■ In 1987, 20% of all taxfilers made a contribution to a Registered Retirement Savings Plan (RRSP). Their contributions totalled over \$9 billion, with the average amount claimed as a deduction being \$2,590.

■ More women are contributing. In 1977 one-quarter of the contributors were women and they were responsible for less than one-fifth of total contributions. Ten years later, women represented 39% of all contributors and placed almost one-third of the money into the plans.

■ Nearly four out of ten contributors to Registered Retirement Savings Plans in 1987 were contributing to employer-sponsored pension plans (RPP) as well. However, their average contribution was lower (\$1,770) than those who did not contribute to RPPs (\$3,120).

■ The level of maximum allowed contributions has been raised three times since the implementation of RRSPs in 1957. Taxfilers have reacted to these changes by increasing the contributed amounts. The new legislation taking effect in 1991 may reinforce that trend.

■ Because age and income levels each play a role in the decision to contribute to an RRSP, the aging of the baby boom generation could have a significant impact on future growth.

Training the work force: A challenge facing Canada in the '90s

■ The need for training will become more critical in the '90s. According to an Employment and Immigration Canada study, 64% of all jobs created between 1986 and 2000 will require more than 12 years of education and training.

■ A Statistics Canada survey found that in 1987 only 31% of Canadian firms do any formal training. This ranged from 27% for firms with less than 10 employees to 92% for firms with 1,000 employees or more.

■ On a per-employee basis, Canadian firms spent \$160 per employee on training, less than half as much as American firms. However, public sector training expenditures were greater than in the United States (0.20% of the gross domestic product compared with expenditures equal to 0.11% in the United States).

■ Total federal government spending on training, which includes income support, industrial support, and direct purchases of courses, as a percentage of the gross domestic product (GDP) has declined from 0.24% in fiscal year 1984-85 to 0.17% in 1989-90.

Overview of literacy skills in Canada

■ About 16% of adult Canadians are unable to deal with most everyday reading requirements. Another 22% have reading skills too limited to deal effectively with unfamiliar written material.

■ As expected, the higher the formal education, the higher the percentage of people with reading skills adequate for everyday requirements. It ranges from 12% of those with no or elementary schooling to 89% of those with university education.

■ The numeracy profile of Canadian adults virtually mirrors the reading profile. About 62% have numeracy skills advanced enough to meet the demands of most everyday documents. However, one in seven adults has limited numeracy abilities: they can locate and recognize numbers in isolation or in a short text, but they cannot perform numerical operations consistently.

■ A geographic pattern emerges in reading and numeracy skills. The proportion of persons with adequate reading skills is highest in the west and declines as one moves eastward. Newfoundland had the lowest estimated reading skills in Canada. Likewise, numeracy skills were strongest in the west and weakest in Newfoundland.

Recent trends in wages

■ After the 1982 recession, wage and price increases both dropped sharply, levelling off at about 4% annually between 1984 and 1987. Since 1988, the rate of increase in wages has been somewhat higher.

■ Wage increases in the goods-producing sector climbed steadily to 5.8% by 1989 but

eased off to 5.5% by July of this year. Manufacturing, with only a slight gain, has been the exception this year.

■ In the services sector, wages rose from an average of 4.7% in 1988 to 6% in the first half of the year. The biggest increases have been in public administration and in finance, insurance and real estate.

Taxes, transfers and regional disparities

■ In 1987 Canada's personal sector generated \$95 billion in modified direct taxes, while receiving \$56 billion in government transfer payments. These payments include Unemployment Insurance benefits, Old Age Security and other related retirement allowances, Canada/Quebec Pension Plan benefits, Family Allowances and Child Tax Credits. Expressed as per capita values, taxes were \$3,731, whereas transfers were \$2,206.

■ The 21 subprovincial areas which paid out more in taxes than they received in transfer payments were concentrated in central Canada and the west. A high degree of urbanization characterizes these areas – 17 of the 25 census metropolitan areas and about half of 113 census agglomerations were located in these regions.

■ An equal number (21) of subprovincial areas received more money in transfer payments than they paid in taxes. They were located almost exclusively in the east and the mid-west. Many are sparsely populated, accounting for only 12% of the population. These regions generated only 5% of Canada's modified direct taxes but claimed 15% of government transfers for their inhabitants.

Labour force participation: An international comparison

■ From 1965 to 1987, Canada experienced the largest increase (20 percentage points) in female labour force participation among the major OECD countries. Over the same period, the male participation rate fell in each of the seven major industrialized countries.

■ In the '60s, women made up four out of ten people in the Japanese labour force. By the late '80s, the United States led with women making up nearly 45% of the labour force. Canada and France tied in second place (43%).

■ The proportion of persons employed in the service industries has grown over the past two decades in all seven countries. Although service sector employment was highest in the United States and Canada, European countries experienced more dramatic changes. □

What's new?

Look it up in "Sources"

- ▶ National survey follows apprentices into the labour market
- ▶ LMAS starts new year with new survey and new reports
- ▶ The coming squeeze on the supply of labour
- ▶ Profile of adult education students being developed
- ▶ Earnings history and post-retirement mortality rates
- ▶ Managing human resources in a high-tech world
- ▶ Shortage of good workers in high-tech industries
- ▶ Forum on pay equity examines progress so far

RRSPs: Tax-assisted retirement savings

Hubert Frenken

Over the last 30 years, Registered Retirement Savings Plans (RRSPs) have evolved into important savings vehicles for Canadians. Total accumulated holdings by financial institutions under these programs are rapidly approaching \$100 billion, significantly greater than the \$55 billion currently held under the Canada and Quebec Pension Plans. How did such a vast pool of savings come to be, who are the participants, and what are the prospects for continued growth?

The history of RRSPs in Canada began in 1957. That year an amendment to the Income Tax Act permitted individuals to make deposits into personal savings plans for future retirement income and thus receive the tax advantages already enjoyed by members of registered employer-sponsored pension plans (RPPs). RPP participants were allowed to contribute to these tax-sheltered savings vehicles as well, though at a lower maximum level.

From meagre to massive

The initial response from taxfilers to the RRSP program was less than overwhelming. For example, in 1968, the first year for which data on the number of contributors are

available, only 172,000 individuals – just one out of every fifty taxfilers – reported such contributions. During the 1970s and 1980s this situation changed, however: by 1987 almost 3.5 million individuals, more than one-fifth of all taxfilers, claimed RRSP deposits as a deduction on their tax returns. Similarly, the percentage of Canada's population aged 15 to 70 participating in RRSPs increased from just over 1% in 1968 to nearly 19% in 1987 (Table 1).

After a slow start in the decade following initial legislation, total amounts of contributions also increased significantly, from less than \$143 million in 1968 to more than \$9 billion in 1987. The average contribution per participant actually more than tripled during that period.¹

What caused such impressive growth? Some reasonable, but difficult to measure, explanations include a greater individual awareness of the need to save for retirement, an increased desire to maximize use of tax shelter opportunities, and a response by taxfilers to the annual advertising campaigns by financial institutions.

Some measurable factors can be analyzed, however. One such factor is related to the greater participation in the labour force by women, contributing to the growth of dual-earner families. Another is a direct result of the periodic raising of the contribution ceilings.

Hubert Frenken is with the Labour and Household Surveys Analysis Division. He can be reached at (613) 951-7569.

Table 1
Contributors and contributions, 1968 to 1987

Year	Contributors			Contributions		
	Number	% of taxfilers	% of population aged 15-70	Total	Average amount	% of total assessed income
	'000			\$ millions	\$	
1968	172	2	1	143	830	0.3
1969	206	2	2	179	870	0.4
1970	249	3	2	225	910	0.4
1971	348	4	3	320	920	0.6
1972*	545	5	4	645	1,180	1.0
1973	758	7	5	923	1,220	1.2
1974	936	8	6	1,244	1,330	1.3
1975	1,078	9	7	1,524	1,410	1.4
1976*	1,291	11	8	2,116	1,640	1.7
1977	1,425	11	9	2,369	1,660	1.7
1978	1,571	11	10	2,675	1,700	1.7
1979	1,726	12	10	3,091	1,790	1.7
1980	1,916	13	11	3,676	1,920	1.8
1981	1,954	13	11	3,879	1,990	1.7
1982	2,100	14	12	4,317	2,060	1.7
1983	2,329	15	13	4,997	2,150	1.9
1984	2,645	17	15	5,792	2,190	2.0
1985	2,893	18	16	6,672	2,310	2.2
1986*	3,216	19	18	7,920	2,460	2.4
1987	3,484	20	19	9,024	2,590	2.6

Sources: Revenue Canada-Taxation; Censuses of Population and intercensal population estimates

* Years contribution ceilings were raised.

More women contributing

An individual's participation in RRSPs and the amount contributed often depends on family income. Married couples may jointly decide which spouse will claim the contributions for tax exemption purposes. (See *Data source and limitations* for further explanation.) Therefore, the extensive growth in labour force participation by women and the possible consequent increase in family income may have generated an increase in the number of male RRSP contributors. Nevertheless, the number of women participating in RRSPs has increased even more significantly, especially in the last decade. In 1977, twenty years after RRSPs were first introduced, only one-quarter of all contributors were women and they were

responsible for less than one-fifth of total contributions. By 1987, however, female contributors represented 39% of the total and were responsible for almost one-third of all payments.

The growth in female labour force participation was reflected in the changes in the taxfiler population evident from 1977 to 1987. The number of female taxfilers increased more quickly than the number of male taxfilers. Moreover, the average income of women increased more rapidly than that of men. Women's share of total assessed income increased from less than 27% in 1977 to greater than 33% in 1987. These factors all contributed to the rise of female RRSP participation.

Data source and limitations

To receive the tax assistance provided to RRSP contributors, one must file a tax return for the tax year in question. This study, therefore, uses the Revenue Canada sample file on the tax-filing public as its data source. For an explanation of the statistical sample, consult Revenue Canada's *Taxation Statistics, 1989*. The published historical data and more detailed information retrieved from the Revenue Canada file have been used in this study.

Some limitations exist in these data. It is not possible to obtain longitudinal patterns, with regard to participation and volume of contributions of individual taxfilers. Each annual tax file identifies only those taxfilers claiming RRSP contributions and the amounts of contributions made in that particular tax year. The file does not reflect past contributors who continue to hold RRSP investments, but have not contributed in the current year.

Annual contributions do not reflect withdrawals or benefit payouts, but only gross deposits reported. Data on cash withdrawals and benefit payments are virtually non-existent at this time.

RRSP participation should possibly be studied from the perspective of the family, since decisions on whether or not to contribute and how much to invest are often made jointly by husband and wife. Information on family income, RRSP participation or volume of contributions is not available in the tax data, however. This information is particularly crucial in determining male/female RRSP participation. The decision on which spouse's tax return is used to claim contributions might be made on the basis of who will receive the greatest tax advantage (most frequently the husband). Taxfilers are allowed to contribute to spousal RRSPs, permitting the build-up of retirement savings for spouses whose income may be such that they are unable to contribute themselves. However, the spouse in whose name the RRSP is issued (the annuitant) is not identified in the tax data. The contributions will appear only for the filer claiming the tax assistance.

A taxfiler is free to apply for as many RRSPs as he or she wishes, to contribute to a previously approved or a newly registered plan and to transfer amounts from any of his or her plans to another plan. Again, the tax data reflects only the number of individuals contributing in the tax year and not the total number of plans in existence, or those newly created, reactivated or terminated.

Responses to increased ceilings

Much of the growth in RRSPs can be traced to the periodic increases in the maximum allowed contribution level. Total RRSP contributions more than doubled from 1971 to 1972, the year the dollar limit was first

raised (Table 1). The increases recorded in the years immediately before and after 1972, on the other hand, were just over 40%. Both the number of contributors and average contributions per contributor increased significantly in 1972.

For 1976 and 1986, two other years when the ceiling on contributions was raised for some taxfilers (see *Contribution ceilings*), the data on both contributors and contributions also show higher percentage growth. The differences evident here, though not as pronounced as in 1972, confirm that tax-

Contribution ceilings

The maximum annual RRSP contribution permitted under the Income Tax Act has been increased several times. As shown in the following schedule, these changes have affected both the lower limit for participants in employer-sponsored pension plans (RPPs), as well as the higher ceiling applicable to taxfilers who were not RPP members:

Year	RPP non-participant	RPP participant
1957	the lesser of 10% of income or \$2,500	the lesser of 10% of income or \$1,500 minus the employee's contribution to the RPP
1965	the lesser of 20% of income or \$2,500	no change
1972	the lesser of 20% of income or \$4,000	the lesser of 20% of income or \$2,500 minus the employee's contribution to the RPP
1975	restrictions applicable to RPP members were extended to participants in deferred profit sharing plans (DPSPs)	
1976	the lesser of 20% of income or \$5,500	the lesser of 20% of income or \$3,500 minus the employee's contribution to the RPP
1986	the lesser of 20% of income or \$7,500	no change

These ceilings will be drastically changed as a result of new legislation effective in the 1991 tax year. (See *Bill C-52*.)

filers, when provided with the opportunity to put aside increased savings for retirement and extend the reduction in tax liability, responded by both greater participation and higher average RRSP contributions.

Profile of contributors

This growth in the number of contributors to RRSPs is unlikely the reaction of a homogeneous or unique group of taxfilers to this retirement savings opportunity. Analysis of the 1987 tax data does provide some insight, however, on which filers are most likely to participate and which tend to contribute at the highest levels.

Level of income a determining factor

Not surprisingly, high-income taxfilers are more likely to participate in RRSPs and make larger contributions than those with lower income. In fact, those with income greater than \$50,000 in 1987 (though less than 6% of all taxfilers) represented nearly 16% of all contributors. Furthermore, they contributed almost 29% of all payments. At the opposite end of the spectrum, the 34% of taxfilers reporting income of less than \$10,000, represented just 3.5% of RRSP contributors and little more than 1% of contributions.²

Looked at differently, in 1987 nearly three out of five taxfilers with income above \$50,000 contributed, with an average contribution of approximately \$4,700, while only 2% of those earning less than \$10,000 contributed, with an average of just \$920 per contributor.

Age plays an important role

As the age of taxfilers increases, at least up to age 59, so does the likelihood of their depositing into an RRSP. After this age the rate of RRSP participation decreases.

Total and average contributions, however, show a different pattern. Contributors aged 60 to 70, though less than 13% of

all contributors, made more than 20% of all payments (an average of nearly \$4,200 per contributor).³ Furthermore, an additional 22% of contributions was reported by those in their 50s. This latter group had the highest rate of RRSP participation (35% versus a 20% rate for all age groups combined), accounting for their large share of contributions.

Different patterns for women than for men

Though the total RRSP participation rate for women was much smaller than that for men (less than 17% versus more than 24%), the percentage of women in the income groups under \$50,000 who contributed was higher than that of their male counterparts (Table 2).

The average amount contributed by women was also less than that of men – \$2,170 versus \$2,860. This lower average can be attributed directly to the lower average earnings of women, since the proportion of total income deposited into RRSPs for men and women is almost identical. One point of interest is that women contributors earning more than \$40,000 made a higher average RRSP investment than contributing men with similar earnings (Table 3).

An analysis of the RRSP participation rate of taxfilers by age group, income range and sex (Table 4) shows that men aged 25 and over with income in excess of \$60,000, had the highest rate. Men aged 50 to 70 with an annual income between \$30,000 and \$59,999 had the second highest rate. Female taxfilers, on the other hand, had the highest RRSP participation among those aged 25 to 64 with income in excess of \$60,000, and aged 40 to 64 with income between \$30,000 and \$59,999. The much higher male than female RRSP participation in the upper-age and higher-income groups is probably due to the greater availability of income eligible for RRSP rollover to men. Women in these age

Table 2
RRSP contributors by income range and sex, 1987

Income range	Both sexes		Men		Women	
	Number	% of taxfilers	Number	% of taxfilers	Number	% of taxfilers
	'000		'000		'000	
Less than \$10,000	121	4	38	4	83	5
\$10,000-\$19,999	622	15	234	12	388	17
\$20,000-\$29,999	885	29	435	25	450	35
\$30,000-\$39,999	788	40	531	37	257	49
\$40,000-\$49,999	514	50	404	48	111	56
\$50,000-\$59,999	240	54	205	54	35	53
\$60,000-\$79,999	163	58	140	58	23	53
\$80,000-\$99,999	61	63	53	64	8	53
\$100,000 and over	90	68	80	71	9	50
Total	3,484	20	2,119	24	1,364	17

Source: Revenue Canada-Taxation

Table 3
Total and average RRSP contributions by income range and sex, 1987

Income range	Both sexes		Men		Women	
	Total	Average amount	Total	Average amount	Total	Average amount
	\$ millions	\$	\$ millions	\$	\$ millions	\$
Less than \$10,000	111	920	33	860	79	940
\$10,000-\$19,999	1,006	1,620	399	1,710	607	1,560
\$20,000-\$29,999	1,903	2,150	972	2,230	931	2,070
\$30,000-\$39,999	1,957	2,480	1,322	2,490	635	2,470
\$40,000-\$49,999	1,445	2,810	1,132	2,810	313	2,820
\$50,000-\$59,999	839	3,490	699	3,410	140	3,960
\$60,000-\$79,999	755	4,630	630	4,490	125	5,450
\$80,000-\$99,999	364	5,980	315	5,910	49	6,520
\$100,000 and over	646	7,210	564	7,040	81	8,650
Total	9,024	2,590	6,065	2,860	2,960	2,170

Source: Revenue Canada-Taxation

groups would be much less likely than men to have such income.⁴

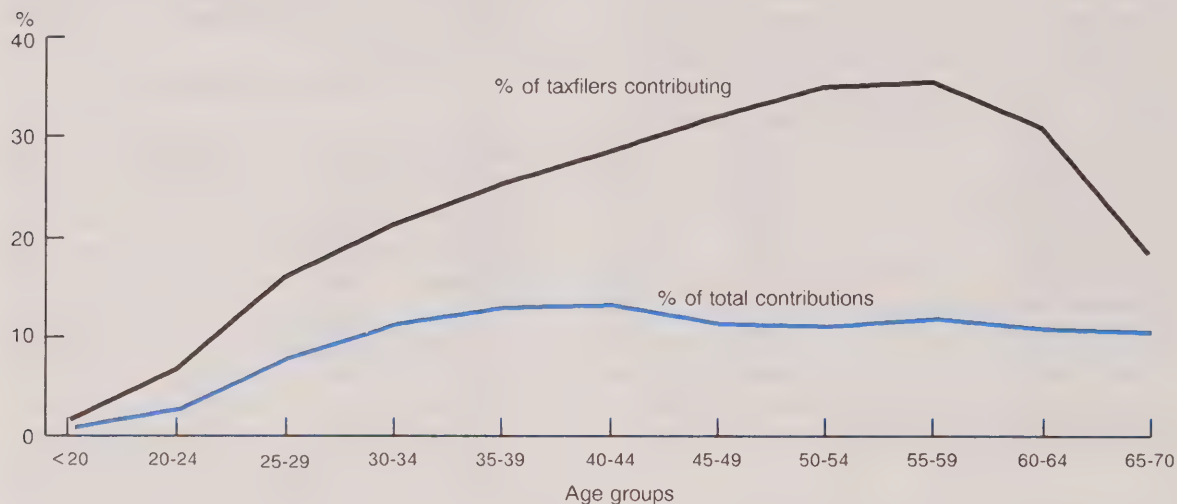
Membership in pension plans increases RRSP participation

Members of employer-sponsored pension plans and deferred profit sharing plans (RPPs and DPSPs) have a lower RRSP

contribution ceiling than non-members. Although taxation statistics do not provide direct information on such membership, those filers reporting personal contributions to RPPs are identifiable.⁵ Of the 3.5 million RRSP participants in 1987, nearly 1.4 million (39%) had made contributions to RPPs as well.

RRSP participation and share of total contributions, 1987

The highest rate of RRSP participation is among taxfilers aged 50-59, while the greatest share of contributions came from those aged 35-44.



Source: Revenue Canada-Taxation

Note: Contributions are permitted up to the end of the year that the taxfiler reaches 71 years of age.

Table 4
Percentage of taxfilers contributing to RRSP by age, income and sex, 1987

	Income range				Total
	Less than \$10,000	\$10,000-\$29,999	\$30,000-\$59,000	\$60,000 and over	
Both sexes	2	21	45	61	20
Less than 25 years	1	10	30	39	5
25-39	2	19	40	69	20
40-49	4	27	47	64	30
50-64	4	36	57	63	34
65-70	1	20	58	65	18
Males	2	18	43	63	24
Less than 25 years	1	10	10	40	6
25-39	2	17	38	69	24
40-49	4	22	45	64	35
50-64	4	31	55	64	38
65-70	1	20	61	72	22
Females	2	24	51	52	16
Less than 25 years	1	11	36	33	4
25-39	2	22	49	71	17
40-49	3	31	55	65	25
50-64	5	40	64	59	28
65-70	2	21	45	38	14

Source: Revenue Canada-Taxation

The average RRSP contribution by taxfilers contributing to both RRSPs and RPPs in 1987 was only \$1,770, compared with \$3,120 for RPP non-contributors. However, the RRSP participation rate of RPP contributors is much higher than the rate for taxfilers not contributing to RPPs. RRSPs were established partially to provide equal opportunity for individuals not able to participate in an RPP to accumulate tax-assisted retirement savings. Yet more than 37% of those taxfilers contributing to an RPP also contributed to an RRSP, whereas less than 16% of the RPP non-contributors participated in an RRSP.

This situation can, to some degree, be explained by the following: paid workers participating in RPPs are generally employed in industries with the highest wages, leaving them with larger disposable

incomes; contributors are nearly all full-time workers; and RPP participation is usually mandatory. Also, because of their participation in a pension plan, these individuals may have a greater awareness of the need to save for retirement.

Sources of income matter

Taxfilers may have income from various sources; for example, earnings from paid work or self-employment and returns from investments or pension plans. The source of their income has some effect on their RRSP contribution opportunities. Their major income source is used to determine their classification into certain groups on the tax file.

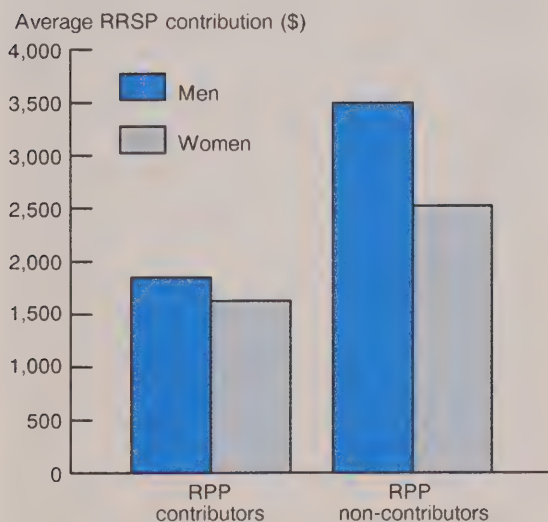
Most taxfilers (66%) are employees (paid workers of businesses, governments, institutions, and so on); the remainder are either self-employed individuals (professionals, salespersons, business proprietors) or persons classified as investors or pensioners.⁶ For every three dollars contributed to RRSPs in 1987, two of these dollars were contributed by paid workers. As expected, average contributions by these workers were lower than those for the other classes of taxfilers. This is due partly to the limits on contributions imposed on RPP and DPSP members.

Self-employed professionals and salespersons, though only 3% of taxfilers, represented 5% of RRSP contributors and were responsible for 10% of the contributions. Their average contribution was nearly twice that of the remaining contributors. These individuals generally had high incomes and their contribution ceiling was not affected by RPP/DPSP membership. They contributed nearly 6% of their total assessed income to RRSPs, a rate more than twice that of all taxfilers combined.

Similarly, the groups identified as business proprietors, investors and pensioners made much higher than average contributions. The 167,000 pensioners who claimed RRSP deposits for tax exemption

Average RRSP deposits by RPP contribution status, 1987

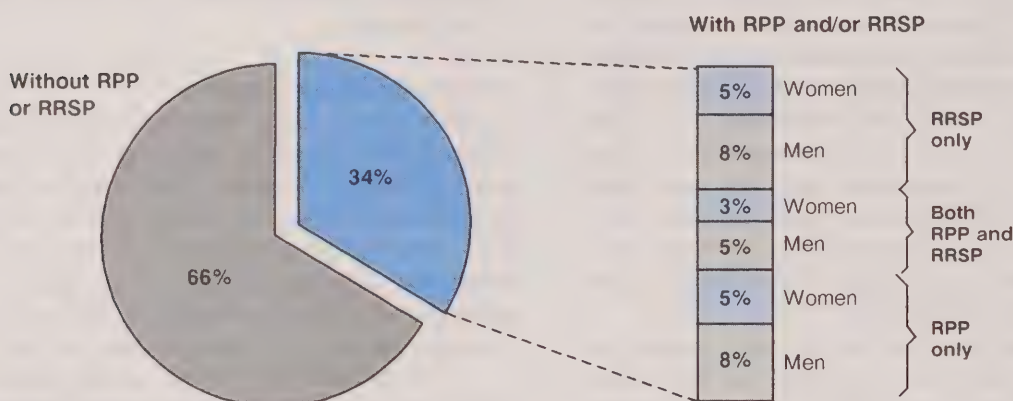
Women not contributing to RPPs deposited, on average, at a much lower level to RRSPs than their male counterparts.



Source: Revenue Canada-Taxation

RPP and RRSP participation, 1987

More than one-third of taxfilers contribute to RPPs, to RRSPs or to both.



Source: Revenue Canada-Taxation

purposes in 1987, contributed an average of nearly \$4,300, much higher than the \$2,600 average for all contributors.⁷

Into the 1990s

What are the prospects for growth in RRSPs in the near future? Factors that will most likely have significant impact in terms of encouraging RRSP growth are new legislation (see *Bill C-52* for details), the changing age structure in Canada's population and the shift to group RRSPs.

New legislation

Revised limits on contributions will be phased in during the next few years as part of a package of legislative changes that aim to remove some former inequities. As a result, some taxfilers will realize an increase in RRSP contribution room (for defi-

nition see *Bill C-52*), others a decrease. Pension plan participation will affect taxfilers' contribution room differently.⁸ High-income, RPP/DPSP non-participants, who traditionally have participated in RRSPs at the highest rates and contributed at the highest levels, will see a substantial increase.⁹

A new provision that will open up further increased opportunity for contributions for many taxfilers is the 7-year carry-forward allowance. According to past rules, the under- or non-utilization of RRSP contribution room in a tax year amounted to a missed opportunity forever lost. This will no longer be the case.¹⁰

The reduction in eligible rollovers and the removal of certain income sources in determining earned income for RRSP purposes (as specified in the legislation) will have a negative effect on RRSP contribution

opportunities, particularly for those in the upper age groups. However, recent pension reform legislation implemented by several provinces and the federal government should generate significant transfers in from RPPs to compensate for such reductions.¹¹

Finally, DPSP and RPP participants will be advised annually by Revenue Canada on the amount of their remaining RRSP room and this may very well encourage further contributions.

Changing demographics

In the 1990s, the first members of the baby boom generation will break into the current prime ages of highest contributions and highest rates of participation in RRSPs, that is, ages 50 to 64.¹² The number of Canadians in this age group – less than 3.6 million according to the 1986 Census – will grow to 4.1 million by 1996. Generally this group

will also be relatively comfortable financially. For example, 1987 tax data reveal the highest average incomes were reported by taxfilers aged 40 to 54, followed closely by those aged 55 to 59.

Group RRSPs

In recent years, some employers have established group RRSPs for their employees in lieu of pension plans.¹³ The data available in this area, although limited, show that this practice is growing in popularity. For example, in 1988, of the 2.7 million new RRSP contracts registered with Revenue Canada, approximately 350,000 (nearly 13%) were under group arrangements. More than half of the 176 specimen plans approved by Revenue Canada for Canadian financial institutions in 1989 were for group arrangements.¹⁴ Furthermore, the proportion of RRSP assets held specifically for group plans by one group of

Bill C-52

A package of Income Tax Act amendments affecting various tax treatment aspects of employer-sponsored pension plans (RPPs), deferred profit sharing plans (DPSPs) and RRSPs was passed by Parliament and received Royal Assent in June 1990. The new legislation introduces a comprehensive limit of tax assistance to all three programs, including a new ceiling for RRSP contributions (the "RRSP contribution room"). RPP/DPSP participation continues to be a factor in the form of a pension adjustment (PA) amount calculated annually for relevant taxfilers, as the following schedule of the new contribution ceilings shows:

Year	RPP/DPSP non-participant	RPP/DPSP participant
1991 to 1995	the lesser of 18% of income or \$11,500 in 1991 increasing annually to \$15,500 in 1995	the lesser of 18% of income or \$11,500 in 1991 (increasing to \$15,500 in 1995) minus the pension adjustment
1996	the maximum \$ amount will be indexed to the rise in average wages	

The annual PA for a participant in a DPSP or a money purchase RPP consists of the total previous

year's employer and employee (if any) contributions to the plan. For a member of a defined benefit RPP, it is a measure of pension savings accrued under the plan the previous year, based on the benefit formula and salary. (For definitions of pension terms, consult *Pension Plans in Canada* and for details on the PA calculation see *Saving for Retirement: A Guide to the Tax Legislation*.)

The legislation will also change or disallow a number of other provisions.

- Some amounts previously eligible for rollover into RRSPs will not be eligible any longer: that is, 1989 will be the last year payments from Old Age Security (OAS), Canada and Quebec Pension Plans (C/QPP), RPPs and DPSPs will be eligible for tax-free transfer into the filer's own RRSP. Also, further limits will be placed on amounts of retiring allowances eligible for rollover. Some direct transfers from some of these sources, particularly RPPs, will still be permitted.
- Rollovers to spousal RRSPs will be phased out by 1994.
- The definition of income on which the 18% will be based will exclude benefits received from OAS, C/QPP, RPPs, DPSPs, RRIFs and retiring allowances, effective the 1990 tax year.

the financial institutions authorized to issue RRSPs grew from 18.5% in 1987 to nearly 21% in 1988.

Conclusion

RRSPs experienced significant growth during the 1970s and 1980s. The share of taxfilers contributing and the proportion of total assessed income contributed increased. Growth in the number of women in the labour force, improved earnings in general, raised maximum contributory levels, and efforts to maximize the use of tax deferral opportunities all contributed to RRSP growth.

This trend will likely continue and may accelerate. Judging by the reaction of taxfilers to the raising of contribution ceilings in the past, many Canadians will likely take advantage of any increase permitted under the new legislation to take effect in 1991. Also, assuming that the current age and income pattern of contributors continues, the aging of the baby boom generation in the 1990s could generate significant growth in both participation and aggregate contributions. The continued growth of group RRSPs could result in further increases in both the number of contributors and, especially, the volume of contributions. □

Notes

¹ These data are in current dollars. Average contributions measured in constant dollars actually decreased over this period. As a percentage of total assessed income of all taxfilers, RRSP contributions still remain small, although they grew from one-third of 1% in 1968 to nearly 2.6% in 1987.

² These low-income taxfilers include some 773,000 individuals (4.5% of all taxfilers) with zero 1987 income. They also comprise many students, part-time workers and retirees whose low income permits little or no opportunity to save. Furthermore, many low-income individuals may have little inclination to save for retirement since the income replacement provided by the public pension programs, Old Age Security/Guaranteed Income Supplement (OAS/GIS) and Canada and Quebec Pension Plan (C/QPP), at retirement is frequently as great as, or even greater than, their pre-retirement earnings.

³ The major reason for the high average contributions of taxfilers in the older population in 1987 was the use of rollovers (the opportunity to transfer eligible periodic and lump-sum payments into RRSPs).

Contributions are permitted up to the end of the year in which the filer reaches 71 years of age and all accumulated savings must be withdrawn or converted into an annuity or Registered Retirement Income Fund (RRIF) before the end of that year.

⁴ Traditionally women have had lower participation rates in RPPs and C/QPP, their job tenure has generally been of shorter duration and their average earnings have not been as high. Consequently, women's pension payments and lump-sum benefits such as termination

allowances are generally lower than those received by men.

⁵ Excluded are all members of active DPSPs or of RPPs who are not required to contribute or who have not made voluntary contributions during the tax year, an estimated 25% to 30% of the total RPP/DPSP membership. Since they did not contribute to these programs themselves, their tax returns would not reflect their membership. It is assumed here that the RPP/DPSP members not identified in the tax data through pension contributions react to the RRSP opportunities in the same way as the RPP contributors.

⁶ An additional 1.8 million taxfilers were not classified (10.5% of the total). More than 70% of these were women and only 3% contributed to an RRSP. They included individuals whose major source of income was from alimony, unemployment insurance benefits, family allowance and other unspecified income.

⁷ The same reason given in note 3 applies here.

⁸ To determine the number of taxfilers that will be affected one way or the other is virtually impossible. A significant number will find their contribution room reduced as a result of the lowering of the percentage of income ceiling from 20% to 18%. However, most of these filers will be low-income individuals, who in the past generally did not contribute to RRSPs or, if so, at minor levels. (See note 2.)

High-income members of defined benefit RPPs with generous benefit formulae may find their RRSP contribution room limited to a small amount or even to nil. For those whose plans require a high personal

Notes – Concluded

contribution, the RRSP room available under the old rules was already small or even zero and, therefore, the new legislation will have little or no effect on them. Participants in DPSPs and defined contribution RPPs (money purchase) will most likely see an increase in their contribution room under the new rules. (For the definition of pension terms, consult Statistics Canada, *Pension Plans in Canada, 1988* (1990)).

⁹ RPP/DPSP non-participants whose income reaches \$41,700 in 1995, will see at least some increase in their contribution ceiling from 1990 to 1995; that is, the 18% of 1995 income will exceed the 1990 \$7,500 maximum. For those with 1995 income of \$83,300 the limit will have doubled – their ceiling will have gone from \$7,500 to \$15,000.

¹⁰ This change will provide greater flexibility to taxfilers with varying annual incomes and varying financial needs. Individuals unable to contribute to RRSPs in some tax years, because of low income or unusual financial obligations, will be able to make up for such missed opportunities with additional contributions in years of higher income or lower financial need.

¹¹ The legislation prohibits the cashing in of both the member's own RPP contributions (if any) and those made by the employer on his behalf after two years of plan participation. They must be either left in the pension fund for a deferred pension, used to buy a deferred annuity, transferred to another RPP or transferred into a "locked-in" RRSP. The latter has a number of advantages over the other options and it is expected that a large share of these pension moneys will be transferred into RRSPs. The dollar amounts eventually involved here will be significant. For example, nearly \$800 million was paid back to terminating members from trustee pension funds alone in 1988.

Funds that are locked in cannot be withdrawn in the form of cash, but must be converted into annuity benefits at retirement age.

¹² As illustrated previously, nearly 44% of 1987 RRSP contributions was made by taxfilers aged 50 and over and the highest participation rate was among those in the age group 50 to 59.

¹³ A single trust may be established for individual plans of employees of an employer or members of an association. The employer or association acts as an agent for the participants or annuitants. The advantages of these arrangements over individual RRSPs are numerous. Contributions can be facilitated through payroll deductions, administration costs are reduced significantly, greater returns on investments can generally be realized considering the increased opportunities of a large pool of capital, and employers are permitted to make contributions. These latter contributions are treated as employment income and regarded as wage or salary increases from a taxation standpoint. They are also subject to the standard annual contribution limits.

Also, unlike RPPs, group RRSPs do not need to be registered with federal/provincial pension authorities, do not have to conform to minimum requisites of pension legislation and involve minimal administrative procedures. Additions and terminations of individual contracts are processed simply and employers who elect to contribute can pre-determine their costs.

¹⁴ Issuers of RRSPs currently include Canadian insurance companies, trust companies, credit unions, chartered banks, and investment companies approved by an Order-in-Council. Issuers must receive approval of specimen plans from Revenue Canada and contracts issued to their clients must conform to the approved specimen plans.

References

Canadian Life and Health Insurance Association. *Annuity Business in Canada*, Circular No. 4876. Toronto, August 1989.

CCH Canadian Limited. *Ottawa Letter, 1989-90*. Don Mills, 1990.

Finance Canada. *Saving for Retirement: A Better Pension System*. Ottawa, October 1986.

---. *Saving for Retirement: A Guide to the Tax Legislation*. Ottawa, March 1988.

Horner, K. "Policy Foundations of the New Tax Treatment of Retirement Savings". Report of proceedings of the Thirty-Eighth Tax Conference, Toronto, November 24-26, 1986. Toronto: Canadian Tax Foundation.

Perreault, J. *Population Projections for Canada, Provinces and Territories 1989-2011*, Occasional, Catalogue 91-520. Ottawa: Statistics Canada, March 1990.

Revenue Canada-Taxation. *Income Tax Act: Contributions to Registered Retirement Savings Plans*, Interpretation Bulletin No. IT-124R5. Ottawa, 1986.

References – Concluded

- . *Your Guide, 1989: Pension and RRSP Tax Guide*. Ottawa, 1989.
- . *Registered Retirement Savings Plans*, Information Circular No. 72-22R7. Ottawa, 1983.
- . *Taxation Statistics: Analyzing T1 Individual Tax Returns and Miscellaneous Statistics*. Ottawa, various issues, 1970-1989.
- . Unpublished data.
- Statistics Canada. *Intercensal Annual Estimates of Population by Sex and Age for Canada and the Provinces, 1976-1981*, Occasional, Catalogue 91-518. Ottawa, September 1983.
- . *Intercensal Annual Estimates of Population by Sex and Age for Canada, Provinces and Territories, 1981-1986*, Occasional, Catalogue 91-518. Ottawa, July 1988.
- . *Pension Plans in Canada, 1988*, Biennial, Catalogue 74-401. Ottawa, February 1990.
- . *Population 1921-1971: Revised Annual Estimates of Population, by Sex and Age Group, Canada and the Provinces*, Occasional, Catalogue 91-512. Ottawa, July 1973.
- . *Age, Sex and Marital Status: Population and Dwelling Characteristics*. 1986 Census of Canada, The Nation Series, Catalogue 93-101. Ottawa, September 1987.
- . *Postcensal Annual Estimates of Population by Marital Status, Age, Sex and Components of Growth for Canada, Provinces and Territories, June 1, 1987*. Annual, Catalogue 91-210, May 1988. Ottawa.
- . *Revised Annual Estimates of Population by Sex and Age for Canada and the Provinces, 1971-1976*. Occasional, Catalogue 91-518. Ottawa, March 1979.
- . *Trusted Pension Funds: Financial Statistics, 1988*. Annual, Catalogue 74-201, March 1990. Ottawa.
- The Wyatt Company. *Tax Assistance for Retirement Savings, Notice of Ways and Means Motion Tabled, December 11, 1989*, Special Memorandum. Ottawa, January 1990.

Training the work force: A challenge facing Canada in the '90s¹

Andrew Sharpe

In recent years there has been a growing debate on the importance of education and training for Canada's future prosperity. As a result, attention has been directed to the role Canada's education and training system can play in developing our economic potential in terms of employment and productivity growth.

This article focuses on Canada's training system and, in particular, on what is required to meet the training needs of the work force in the '90s. For example, is training available to all workers who require it? Is the amount of workplace training sufficient to meet industry's growing need for skilled workers?

The basic skills levels of the Canadian work force

A frequent complaint of Canadian employers is that the basic literacy and numeracy skills of the work force are inadequate. Without such skills workers cannot function effectively in the modern workplace. For example, they may not be able to read manuals, perform numerical calculations,

operate sophisticated equipment, use information technologies, or do myriad other tasks requiring a basic level of skills. It follows that workers without these basic skills are less able to adapt to the growth and decline of firms and to the introduction of new technology.

It is true that the average level of formal educational attainment of the Canadian labour force has risen significantly over the past several decades and can be expected to continue to increase.² This trend arises because young people entering the labour force have, on average, higher levels of educational attainment than those currently leaving the labour force. Nevertheless, concern about the basic skills of the Canadian labour force is well justified for at least two reasons.

First, the proportion of the work force requiring more than the bare minimum of basic skills is rising. Unskilled jobs in many industries and occupations have been eliminated by technological change. New employment opportunities are concentrated in occupations requiring more than basic reading and numeracy skills and very often, advanced skills. For example, employment in primary occupations such as forestry and mining, which in the past have generally required little formal education, has fallen in the '80s. On the other hand, over two-thirds of the net increase in employment since 1981 has been in managerial and professional occupations. Needless to say,

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skills requirements are relatively high in these occupations.

These trends are expected to continue, if not accelerate, in the future. Employment and Immigration Canada estimates that 64% of all jobs created between 1986 and the year 2000 will require more than 12 years of education and training and that nearly one-half of new jobs will require more than 17 years of education and training.³

A second reason for concern is the considerable evidence to substantiate employer complaints about the poor basic skills of their employees, despite the rising formal educational attainment of the labour force. The results of Statistics Canada's Survey of Literacy Skills Used in Daily Activities⁴ show that 38% of Canadians aged 16 to 69 – 6.8 million individuals – do not

meet most everyday reading demands (Table 1). Not surprisingly, the problem is more common among those with low levels of schooling. The proportion is also higher for immigrants, residents of Atlantic Canada and Quebec, and the older age groups.⁵ [*The next article in this issue presents more detailed information from that survey. – Ed.*]

The implications of the inadequate level of basic reading and numeracy skills of the Canadian work force are significant. The Canadian Business Task Force on Literacy has estimated that in 1988 the direct cost of illiteracy to business in Canada was in the neighbourhood of \$4 billion and the cost to society at large was about \$10 billion.⁶ A recent Conference Board of Canada survey⁷ found that a lack of basic reading and numeracy skills leads to firms having diffi-

Table 1
Percentage distribution of reading skill levels of persons aged 16 to 69, 1989

	Level 1	Level 2	Level 3	Level 4
Both sexes*	7	9	22	62
Males	5	9	23	63
Females	5	10	22	63
16-24 years	1	5	23	71
25-34 years	2	5	17	76
35-54 years	4	10	23	63
55-69 years	15	21	29	36
No schooling or elementary	27	33	28	12
Some secondary	3	13	35	48
Secondary completed	--	6	22	70
Trade school	--	--	25	63
Community college	--	--	15	81
University	--	--	8	89
Born in Canada	3	9	22	66
Immigrants	14	14	24	48

Source: Survey of Literacy Skills Used in Daily Activities

* Persons who reported having no skills in either of Canada's official languages are included in Level 1. They are excluded from all other figures in this table.

Level 1 Difficulty dealing with printed materials. Individuals most likely identify themselves as people who cannot read.

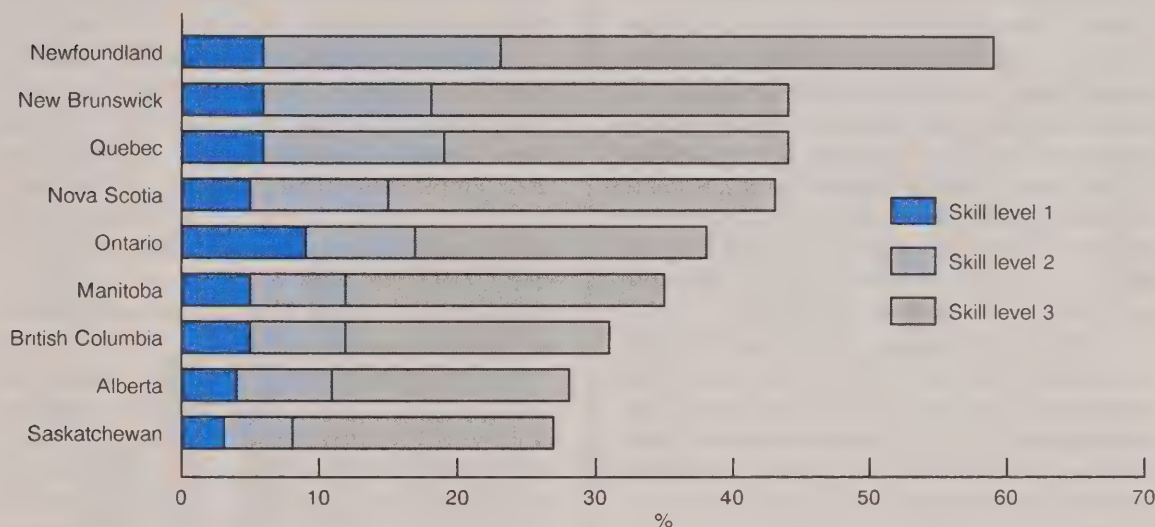
Level 2 Ability to use printed materials only for limited purposes such as finding a familiar word in a simple text.

Level 3 Ability to use reading materials in a variety of situations provided the material is simple, clearly laid out and the tasks involved are not too complex.

Level 4 Ability to meet most everyday reading demands. This is a large and diverse group which exhibits a wide range of reading skills.

Percentage of persons aged 16 to 69 with reading skill levels 1, 2, and 3, 1989

The percentage of persons with limited reading abilities varies considerably from province to province.



Source: Survey of Literacy Skills Used in Daily Activities

Note: The sampling variability associated with estimates for Prince Edward Island are too high for the estimates to be released.

culties in introducing new technologies and in upgrading the skills of workers.

A key challenge of the '90s will be the development of efforts that raise the basic skills level of the work force. Because of slower labour force growth in the future, the Canadian Labour Market and Productivity Centre estimates that about two-thirds of those who will be in the labour force in the year 2005 are already part of the labour force. In 1989 only one-half of the labour force was participating in the labour market 15 years earlier. This means that the problem is becoming increasingly a question of upgrading the basic skills of those currently in the labour force and less a question of ensuring that those leaving the educational system have acquired basic skills.

Job-related literacy programs in particular offer excellent opportunities to

remedy the basic skills inadequacies of workers. The most effective literacy programs have been found to be those that teach reading and math skills in their "functional context", that is, in direct relation to the trainees' jobs.

Canada's training effort

Canada's training effort includes both basic skills training and training for specialized, higher-level skills. In many occupations the rapidly growing demand for skilled workers is outstripping the abilities of the educational system and immigration to supply the needed number of workers. This development has led to the creation of a skills gap. Evidence of this gap can be found in the growing number of occupations that are currently experiencing skilled labour short-

ages. Such occupations include air traffic controllers, aerospace engineers, software programmers, systems analysts, and electrical engineers.⁸ In the past, economic downturns have eased, if not eliminated, labour shortages. Today skilled labour shortages appear to be concentrated in industries less vulnerable to the business cycle or in occupations vital to the health of a company. Consequently, these labour shortages may be more structural than cyclical in nature and will be alleviated only by increasing the supply of skilled workers through training and, possibly, through immigration.

The effectiveness of Canada's private and public training effort is thus the key determinant of our ability to meet the growing skills gap. In terms of assessing our training performance, a number of trends should be highlighted:

- on a per-employee basis, Canadian firms spend less than half as much on training as American firms;
- only 31% of Canadian firms do any formal training;
- total federal government expenditures on training have fallen as a share of the gross domestic product (GDP) since 1984-85;
- the poorly educated have a below average incidence of training.

The most comprehensive source of information on the state of private sector training in Canada is the Human Resource Training and Development Survey, an establishment-based survey conducted by Statistics Canada on behalf of Employment and Immigration Canada.⁹ This survey found that in 1986-87, Canadian firms spent \$1.4 billion on training, an amount equivalent to approximately 0.6% of payroll or 0.24% of GDP. On a per-employee basis this represents about \$160 and is estimated to be

less than half the level of training expenditure by American firms.¹⁰ A more developed private sector training culture in the United States is one possible explanation for this difference.

One particularly noteworthy finding from the Human Resource Training and Development Survey was that only 31% of firms actually provide formal training for their employees. The incidence of training was low for small firms – 27% of firms with less than 10 employees provided training, compared with 76% of firms with 100 or more employees and 92% of firms with 1,000 or more employees.

Additional evidence of Canada's weakness in the area of workplace training is provided by the World Economic Forum, which ranks countries by a large number of competitiveness criteria. In 1990, Canada ranked second among the 23 member countries of the Organisation for Economic Co-operation and Development (OECD) in terms of human resources due to its relatively young population, rapid labour force growth, high levels of public expenditure on education and high enrolment rate in secondary schooling and higher education.

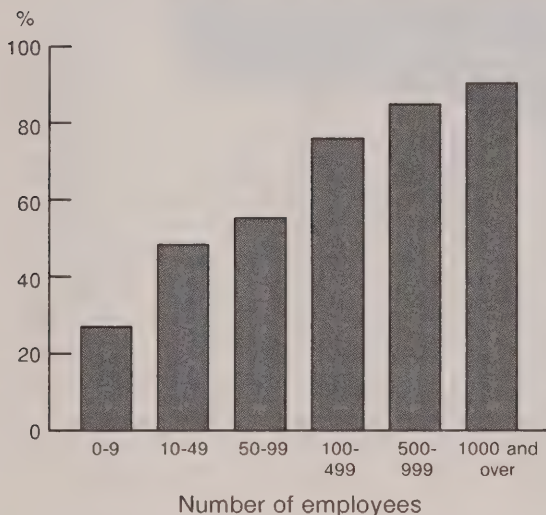
Table 2
Participation and expenditure on training by company size, 1986-1987

Number of employees	Distribution of all companies	Number of participants per 100 employees	Average expenditure per participant
	%		\$
All sizes	100	27	570
0-9	83	18	760
10-49	15	19	540
50-99	1	15	490
100-499	1	20	540
500-999	--	32	610
1,000 or more	--	48	540

Source: Human Resource Training and Development Survey

Percentage of companies providing training by company size, 1986-87

The larger the company, the more likely it is to provide training for its employees.



Source: Human Resource Training and Development Survey

But in terms of the adequacy of vocational training in meeting the needs of a competitive economy Canada did much more poorly – only 16th place.¹¹ This is down from 11th place in 1989.

In contrast to the private sector, Canada's public sector training expenditure on a proportional basis exceeds that of the United States. OECD data for 1988 show that Canada's labour market training expenditure on adults was equivalent to 0.20% of GDP and was tenth among 23 OECD countries. Expenditures in the United States represented 0.11% of GDP. Despite the higher public expenditure in Canada, total expenditure on training, which includes both public and private sector expenditure, was still proportionately higher in

the United States than in Canada (0.77% of GDP versus 0.46% in 1987).¹²

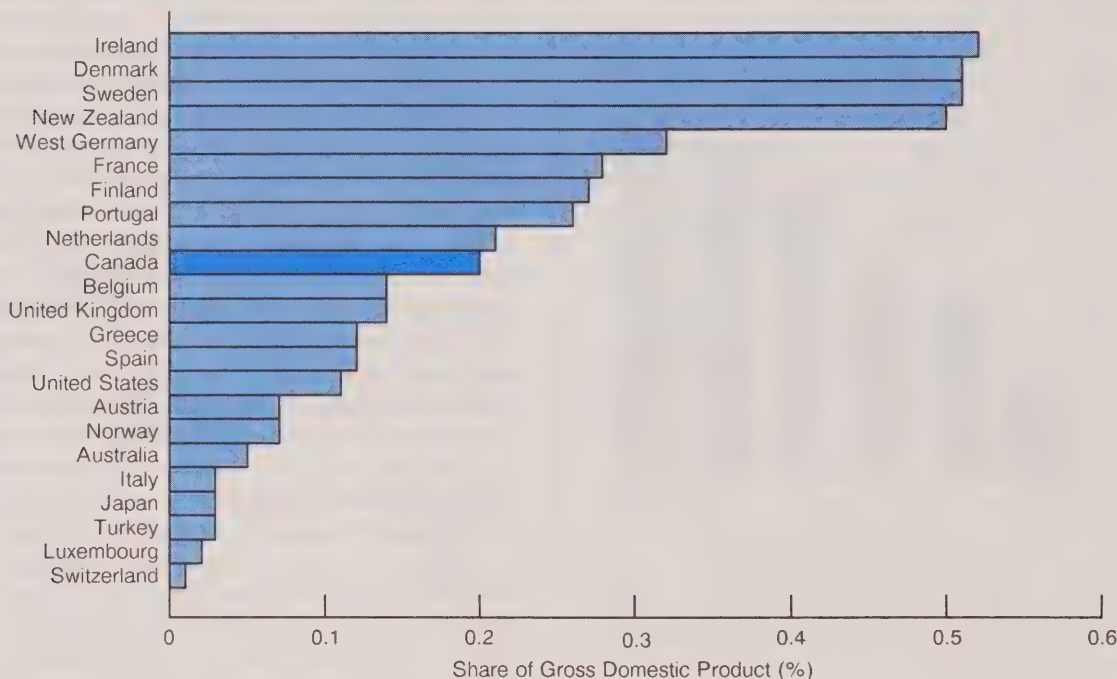
In absolute terms, federal government expenditure on training has been relatively stable since the mid-80s. In the 1984-85 fiscal year, total federal spending on Canadian Jobs Strategy training, which includes income support, industrial support, and direct purchases of courses, was \$1,096.7 million (Table 3). By 1989-90 the total had risen marginally to \$1,122.3 million. As a share of GDP this represents a decline from 0.24% to 0.17%. The Labour Force Development Strategy,¹³ announced by the federal government in April 1989, has given increased priority to training. The government proposes to use revenues from Unemployment Insurance premiums to finance additional expenditure on training. This policy shift may reverse the downward trend in federal expenditure on training.

Given trends in federal expenditure on training, the number of individuals enrolled in government-sponsored institutional training courses has, not surprisingly, fallen. From the mid-70s to 1985-86, the numbers fell 20% despite a large increase in the 20-54 year-old age group, which accounts for most of the persons who enrol in government-sponsored institutional training courses. Since 1986-87, a continuing downward trend has been observed.

The results of Statistics Canada's 1987 Labour Market Activity Survey (LMAS) provide interesting information on the incidence of training, by personal characteristics. Participants in the survey were asked if, during 1987, they had participated in any skill training, education upgrading or work experience program sponsored by Employment and Immigration Canada and if they had taken any other training that lasted more than 25 hours to learn a new job-related skill or a new job. Several interesting observations emerge from the survey:

Public expenditure on labour market training of adults in OECD countries, 1988

Canada ranked tenth in spending on labour market training programs in 1988.



Source: *OECD Employment Outlook*, July 1989

- only 5.3% of the population aged 16 to 69 responded that they had received training in 1987 (Table 4);
- not surprisingly, the incidence of training falls rapidly for those 45 and over, and particularly for those 55 and over;
- the incidence of training is lower for the poorly educated.

The picture that emerges from the LMAS on Canada's training effort is not particularly encouraging. Given the increased importance of training in the '90s

because of rising skills demands on the work force, the extent of training undertaken may be inadequate. In addition, persons with no postsecondary education have a significantly lower incidence of training than those who have completed at least some postsecondary education.

The importance of upgrading the skills of the work force for the health of the Canadian economy in the '90s is widely recognized. Mention has already been made of the federal government's Labour Force Development Strategy with its emphasis on training. A recent Canadian Labour Market and Productivity Centre survey of business and labour leaders¹⁴ found that both groups

Table 3
Canadian Jobs Strategy national expenditures on training, 1976-77 to 1989-90

Fiscal year	Total ¹	Income support ²	Industrial support	Direct purchase of courses ³	Job entry training ⁴	Other ⁵
\$ millions						
1976-77 ⁶	545.0	200.2	59.5	265.5	...	19.8
1977-78 ⁶	588.6	209.7	76.7	282.4	...	19.8
1978-79 ⁶	635.1	219.7	83.7	300.9	...	30.8
1979-80	669.7	221.5	102.1	320.3	...	25.8
1980-81	770.0	261.4	113.6	366.4	...	28.6
1981-82	829.8	272.2	137.7	403.7	...	16.2
1982-83	925.9	315.0	110.2	469.8	...	30.8
1983-84	1,021.3	337.2	131.2	505.8	...	47.1
1984-85	1,096.7	335.4	156.3	501.6	6.8	96.6
1985-86	1,055.8	372.3	76.4	510.8	42.2	54.1
1986-87	1,123.6	417.8	58.1	479.1	124.5	44.1
1987-88	1,055.1	398.5	60.5	437.8	130.6	27.7
1988-89	1,024.2	392.7	74.7	399.2	140.8	16.8
1989-90	1,122.3	454.2	81.7	449.4	132.8	4.2

Source: Unpublished data supplied by Employment and Immigration Canada.

¹ Excludes the federal government summer student program Challenge.

² Includes Direct Purchase Option Allowances and use of UI section 26 funds.

³ Includes purchase of apprentice courses, skill-related courses and other types of courses such as language training, basic life skills and occupational orientation courses. Excludes provincial administration costs and includes Coordinating Groups.

⁴ Includes Youth Training Option (YTO) only for 1984-85 and new Job Entry and YTO for 1985-86. For 1986-87 to 1989-90, figures include Entry and Re-entry Option.

⁵ Includes training support programs such as Skills Growth Fund, Training Trust Fund, grants to provinces and provincial administration costs (the latter for 1976-77 to 1985-86).

⁶ Excludes Training Improvement Program.

believed training and education was the most important factor in improving Canada's international competitiveness (Table 5).

Implications and conclusions

This article has focused on the training needs of Canada's work force in the '90s. The serious deficiencies that have been found in the basic skills levels of many Canadian workers are likely to become a challenge to both the private and public sectors in the years ahead. Canada currently appears to be lagging behind its major competitors in its workplace training effort.

When combined with the rapidly growing skill requirements of the workplace, a potential labour market crisis may be

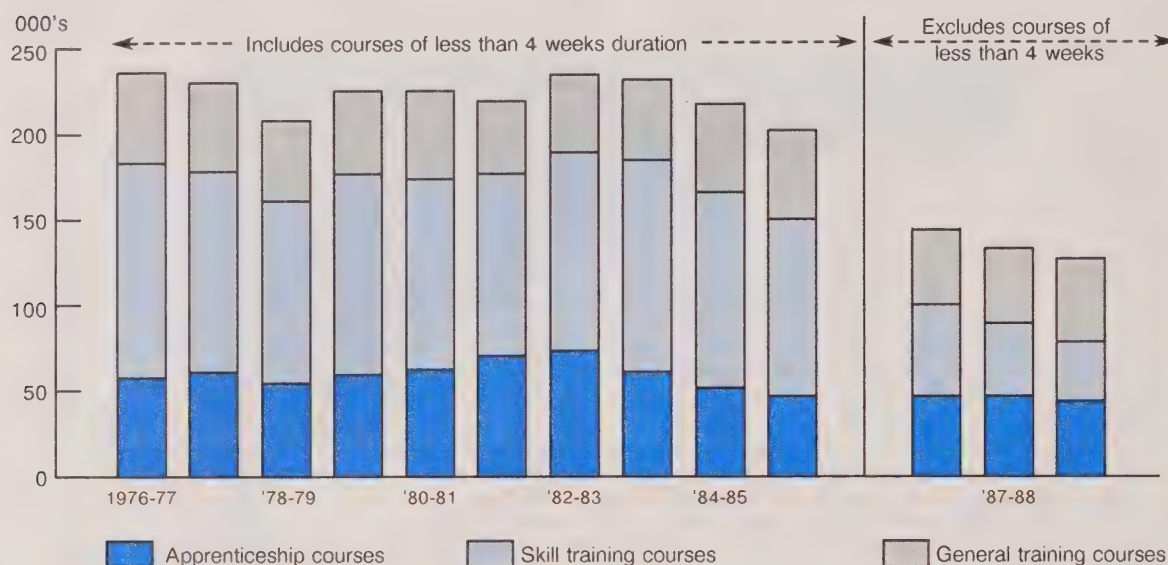
emerging. Those without skills may find themselves increasingly disadvantaged in the job market. Firms unable to recruit qualified personnel may grow at less than their potential and may be forced to initiate or extend their own training efforts.

A large number of reports have recently drawn attention to this situation and its implications for the Canadian economy.¹⁵ These reports have consequently stressed the importance of making our training effort more effective. All of these reports have emphasized the need for Canada to develop a national training culture where the priority placed on education and training is greatly enhanced.

Rapidly changing technologies and economic circumstances now mean that workers must upgrade existing skills and

Enrolment in federally sponsored institutional training courses

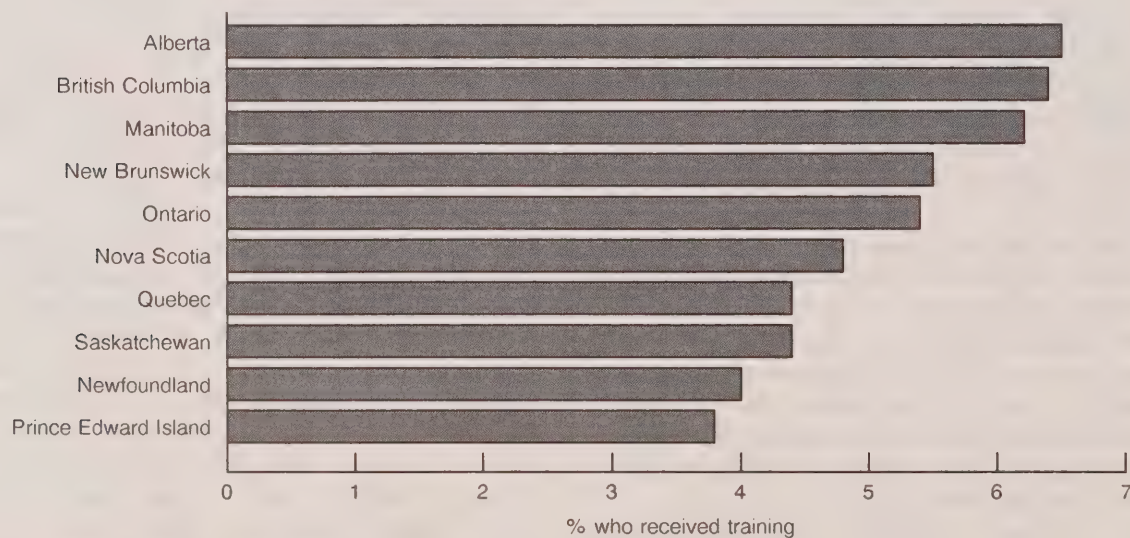
Enrolment in federally sponsored institutional training courses has declined since the mid-80's.



Source: Unpublished data supplied by Employment and Immigration Canada.

Incidence of training by province for persons aged 16 to 69, 1987

The incidence of training is highest in Western Canada.



Source: Labour Market Activity Survey

Table 4
Incidence of training by personal characteristics, 1987

	Persons who took training*	Distribution %
Both sexes	5.3	100.0
Male	5.8	49.1
Female	4.8	50.9
Labour force activity in 1987		
Employed/no unemployment	6.0	64.8
Employed/unemployment	8.3	12.1
Unemployed/no employment	6.6	2.6
Not in the labour force	1.0	20.5
Age		
16-24	7.0	20.4
25-44	6.9	46.6
45-54	3.5	14.6
55-69	1.0	18.5
Education		
None/elementary	1.0	14.6
High school (some or completed)	4.9	49.4
Some postsecondary	7.8	10.5
Postsecondary, certificate or diploma	7.3	13.3
University degree	7.8	12.3
Visible minority		
Yes	4.5	7.4
No	5.3	92.6
Language first spoken		
English	6.0	59.0
French	4.8	26.2
Other	3.1	14.8
Country of birth		
Canada	5.7	82.1
Other	3.5	17.9

Source: Labour Market Activity Survey, calculated by Canadian Labour Market and Productivity Centre.

* Includes persons who participated in any skill training, education upgrading, or work experience program sponsored by Employment and Immigration Canada in 1987 and persons who took any other training that lasted more than 25 hours to learn a new job-related skill or to get a new job in 1987.

Table 5
Most important factor identified by business and labour leaders in improving Canadian competitiveness

	Business leaders	Labour leaders
	%	
Total	100	100
Training and education	35	38
Lower government deficits	16	0
Increased research and development	14	26
More overseas sales	10	10
Canadian dollar below \$0.85US	8	4
Industrial policies	7	5
Less regulation	3	0
Employee participation	3	0
Consumption taxes	2	0
Lower interest rates	1	17

Source: Business and Labour Leaders Speak Out on Training and Education, Canadian Labour Market and Productivity Centre, January, 1990. This survey was carried out in Spring, 1989.

learn new skills throughout their working lives. Employers, unions, governments, and of course employees, all have a role to play to ensure that the increased training needs of the '90s are met. □

Notes

¹ This article is drawn from a paper entitled "Les défis pour le Canada dans le domaine de l'enseignement et de la formation", presented at the annual conference of the Association des économistes québécois on L'éducation et la formation à l'heure de la compétitivité internationale, Hull, Quebec, April 19-20, 1990.

² Labour Force Survey data show that, in 1975, 20.3% of the labour force had eight years or less of schooling. By 1989 this proportion had dropped to 8.9%. At the other end of the spectrum, the share of the labour force with a university degree has risen from 9.2% in 1975 to 14.9% in 1989. See Statistics Canada, *Labour Force Annual Averages* (1983); and Statistics Canada, *The Labour Force* (1990).

³ See Employment and Immigration Canada, *Success in the Works: A Profile of Canada's Emerging Workforce* (1989).

⁴ See G. Montigny, *Survey of Literacy Skills Used in Daily Activities: Reading Skills* (1990). This survey classified Canadians aged 16 to 69 into four levels of reading, writing and numeracy skills on the basis of their performance on a series of tests conducted in one of Canada's two official languages. Persons classified to levels 1, 2 and 3 are considered to have skills too limited to deal with most everyday reading demands. The Southam Literacy Study found that in 1987, according to its definition of literacy, 24% of the population aged 18 and over – 4.5 million individuals – were illiterate. See The Creative Research Group Ltd., *Literacy in Canada: A Research Report prepared for Southam News* (1987).

⁵ Similar results were found in the numeracy portion of the survey, the results of which were released on July 17, 1990.

⁶ See Canadian Business Task Force on Literacy, *Measuring the Costs of Illiteracy in Canada* (1988). The estimates, prepared by management consultants Woods Gordon, are based on a review of the available literature and on interviews with business and government organizations in Canada and the United States. The task force cautions that its estimates are "typically only best guesses, the accuracy of which may be questioned" and that the "main value of this report will therefore be as a preliminary agenda for future research" (p. 3).

⁷ See B. Des Lauriers, *Canadian Business Review* (1989).

⁸ Two sources for listings of occupations experiencing shortages are M. Charron et al., *Surplus et pénuries de main-d'oeuvre prévus au Québec et dans ses régions pour 1990* (1989); and Ministry of Skills Development, *Adjusting to Change: An Overview of Labour Market Issues in Ontario* (1988). Projected overall growth in labour demand for various skilled occupations in

Canada for the 1986-1995 period is found in Employment and Immigration Canada, *Job Futures: An Occupational Outlook to 1995* (1987).

⁹ See Statistics Canada, *Distribution Report: Human Resource Training and Development Survey* (1989).

¹⁰ See Employment and Immigration Canada, *Success in the Works: A Profile of Canada's Emerging Workforce* (1989).

¹¹ See IMEDE International Management Development Institute and World Economic Forum, *The World Competitiveness Report, 1990* (1990).

¹² The proportion for the United States is taken from A. Carnevale and L. Gainer, *The Learning Enterprise*, (1989). The proportion for Canada is calculated from results of the Human Resource Training and Development Survey, 1987.

¹³ See Employment and Immigration Canada, *Success in the Works: A Policy Paper: A Labour Force Development Strategy for Canada* (1989).

¹⁴ See Canadian Labour Market and Productivity Centre (CLMPC), *Business and Labour Leaders Speak Out on Training and Education* (1990).

¹⁵ These reports include two CLMPC documents: *The Report of the Business/Labour Task Force on Adjustment: Working Together to Manage Change* (1989) and the *Report of the CLMPC Task Forces on the Labour Force Development Strategy* (1990); the report of the federal government's Advisory Council on Adjustment entitled *Adjusting to Win: Report of the Advisory Council on Adjustment* (1989) (also known as the de Grandpré report); the mutual position paper of the provinces and territories entitled *Partners For People: A Human Resource Adjustment and Development Strategy for the 1990s* (1989); the Canadian Chamber of Commerce, *Focus 2000: Report of the Task Force on Education and Training* (1989); and the Economic Council of Newfoundland and Labrador report entitled *Education and Labour Market Training: Pre-requisites to Economic Development in Newfoundland and Labrador* (1990). The Ontario Premier's Council has released a report *People and Skills in the New Global Economy* (1990).

In the United States, the *Economic Report of the President Transmitted to the Congress* (1990) has devoted a large section to the issues of education and training. The Commission on Workforce Quality and Labor Market Efficiency also dealt with education and training issues in its 1989 report entitled *Investing in People: A Strategy to Address America's Workforce Crisis* (1989). Mention should also be made of the 1989 report of the M.L. Dertouzos et al. entitled *Made in America: Regaining the Productive Edge* (1989).

References

- Advisory Council on Adjustment (Canada). *Adjusting to Win: Report of the Advisory Council on Adjustment*. Ottawa, March 1989.
- Canadian Business Task Force on Literacy. *Measuring the Costs of Illiteracy in Canada*. [Canada], February 1988.
- Canadian Chamber of Commerce. *Focus 2000: Report of the Task Force on Education and Training*. Ottawa, August 1989.
- Canadian Labour Market and Productivity Centre. *Business and Labour Leaders Speak Out on Training and Education*. Ottawa, January 1990.
- . *Report of the Business/Labour Task Force on Adjustment: Working Together to Manage Change*. Ottawa, January 1989.
- . *Report of the CLMPC Task Forces on the Labour Force Development Strategy*. Ottawa, 1990.
- Carnevale, A.P. and L.J. Gainer. *The Learning Enterprise*. Washington, D.C.: U.S. Department of Labor; Alexandria, VA: American Society for Training and Development, 1989.
- Charron, M. et al. *Surplus et pénuries de main-d'œuvre prévus au Québec et dans ses régions pour 1990*. Montréal: Ministère de la Main-d'œuvre, de la Sécurité du Revenu et de la Formation professionnelle, 1989.
- Commission on Workforce Quality and Labor Market Efficiency. *Investing in People: A Strategy to Address America's Workforce Crisis*. Washington, D.C.: U.S. Dept. of Labor, 1989.
- Dertouzos, M.L. et al. *Made in America: Regaining the Productive Edge*. Cambridge, Mass.: MIT Press, 1989.
- Des Lauriers, B. "Functional Illiteracy in Canadian Business." *Canadian Business Review*, Vol. 16, No. 4, Ottawa: The Conference Board of Canada, 1989, pp. 36-39.
- Economic Council of Newfoundland and Labrador. *Education and Labour Market Training: Pre-requisites to Economic Development in Newfoundland and Labrador*. St. John's, Newfoundland, 1990.
- Employment and Immigration Canada. *Job Futures: An Occupational Outlook to 1995*. 1988-89 edition, Ottawa, 1987.
- . *Success in the Works: A Policy Paper: A Labour Force Development Strategy for Canada*. Ottawa, April 1989.
- . *Success in the Works: A Profile of Canada's Emerging Workforce*. Ottawa, April 1989.
- IMEDE International Management Development Institute and World Economic Forum. *The World Competitiveness Report, 1990*. Lausanne, Switzerland: IMEDE, July 1990.
- Ministry of Skills Development. *Adjusting to Change: An Overview of Labour Market Issues in Ontario*. Toronto: Labour Market Research Group, 1988.
- Montigny, G. *Survey of Literacy Skills Used in Daily Activities: Reading Skills*. Ottawa: Statistics Canada, April 1990.
- Ontario. Premier's Council. *People and Skills in the New Global Economy*. Toronto: Queen's Printer for Ontario, 1990.
- Québec. Ministère de la Main-d'œuvre, de la Sécurité du Revenu et de la Formation professionnelle. *Partners for People: A Human Resource Adjustment and Development Strategy for the 1990s*, document produced on behalf of the Provinces and Territories. Quebec City, November 1989.
- Sharpe, A. "Les défis pour le Canada dans le domaine de l'enseignement et de la formation." *L'éducation et la formation à l'heure de la compétitivité internationale*. Actes de la conférence annuelle de l'Association des économistes québécois, Hull, 19-20 April 1990. Forthcoming.
- Statistics Canada. *Labour Force Annual Averages, Occasional, Catalogue 71-529*. Ottawa, April 1983.
- . *Distribution Report: Human Resource Training and Development Survey*. Ottawa, 1989.
- . *The Labour Force, Monthly, Catalogue 71-001*. Ottawa, January 1990.
- The Creative Research Group Ltd. *Literacy in Canada: A Research Report prepared for Southam News, Ottawa, Ontario*. Toronto, 1987.
- United States. Council of Economic Advisers. "Annual Report of the Council of Economic Advisers." *Economic Report of the President Transmitted to the Congress*, Washington, D.C.: Government Printing Office, 1990.

Overview of literacy skills in Canada

Gilles Montigny and Stan Jones

Concern about the literacy of Canadians has grown in the past several years. Inadequate literacy skills can have devastating economic effects, hindering Canada's ability to train and redeploy its work force to compete internationally. It can have severe social consequences as well, marginalizing large numbers of Canadians who find themselves unable to participate fully in society.

To determine the scope and nature of the literacy problem, the National Literacy Secretariat commissioned Statistics Canada to conduct a survey that would assess directly the functional reading, writing and numeracy skills of Canada's adult population. This article recapitulates the main findings of the reading and numeracy portions of the survey. It also outlines the methodology used to design and score the test.

The survey

The Survey of Literacy Skills Used in Daily Activities (LSUDA) is indebted to earlier research by the National Assessment of Educational Progress in the United States and on the first direct study of the subject in

Canada, the Southam Literacy Survey conducted in 1987.

The LSUDA consisted of a series of face-to-face interviews administered to a representative sample of approximately 9,500 persons aged 16 to 69, pre-selected from respondents to the monthly Labour Force Survey. It included a survey questionnaire on the respondent's background, and a preliminary round of test questions. If the respondent passed the preliminary test, a main test was administered. The main test involved a series of tasks designed to assess an individual's capacity to deal with the type of reading, writing and numeracy activities commonly encountered in daily life.

The LSUDA defined functional literacy as "the information processing skills necessary to use the printed material commonly encountered at work, at home and in the community."

Four levels of reading ability were identified (see *Definitions of the literacy levels*). In this report, Canadians at Levels 1 and 2 are described as having skills too limited to deal with everyday reading demands in either French or English. Canadians at Level 4 have reading skills sufficient to meet everyday requirements, while those at Level 3 have a proficiency enabling them to handle reading demands within a more limited range.

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Definitions of the literacy levels

The LSUDA designers selected certain points along the functional literacy continuum as representing significant characteristics of literacy. These levels, defining the capabilities exhibited by the respondents, are described below.

It should be noted that neither the reading nor the numeracy results include a full complement of respondents. About 2% of the respondents did not take any part of the test because they reported having no skills in either official language. These people were classified to reading Level 1 for inclusion in the general results. However, because no data were collected for them, they are excluded from all subsequent analysis by demographic or socio-economic characteristics.

An additional 3% of respondents, representing about 500,000 Canadians, failed the preliminary test. The numeracy results therefore exclude these people because the numeracy component was contained in the main test. Thus population counts in the tables showing the reading and the numeracy results are not the same.

Assessment of reading skills

- Level 1:** Canadians who have difficulty dealing with printed materials. They most likely identify themselves as people who cannot read.
- Level 2:** Canadians who can use printed materials only for limited purposes such as finding a familiar word in a simple text. They would likely recognize themselves as having difficulties with common reading materials.
- Level 3:** Canadians who can use reading materials in a variety of situations provided the material is simple, clearly laid out and the tasks involved are not too complex. Although these people generally do not see themselves as having major reading difficulties, they tend to avoid situations requiring reading.
- Level 4:** Canadians who meet most everyday reading demands. This is a large and diverse group which exhibits a wide range of reading skills.

Assessment of numeracy skills

- Level 1:** Canadians who are able, at most, to locate and recognize numbers in isolation or in a short text.
- Level 2:** Canadians who can perform a simple numerical operation such as addition or subtraction.
- Level 3:** Canadians who can perform sequences of numerical operations which enable them to meet most everyday demands.

To fairly assess the abilities of the individuals, all the test items simulated real life tasks. For instance, in a typical reading Level 3 task, respondents were asked to read a text given to them by the interviewer and to determine the date on which they had to return a form to their child's school. Rather than simply find a word (as in Level 2), they had to understand a sentence and decide what action it required. In a more complex Level 3 item, respondents were given a package of sandpaper and asked to determine whether, based on the directions printed on the package, they could use that sandpaper for a particular kind of job.

The functional numeracy skills of Canadian adults (see *Definitions of the literacy levels*) were assessed by using commonly encountered documents such as a swimming pool schedule, a bank deposit slip and a catalogue order form. Level 1 involved identifying numbers, Level 2 performing a single numerical operation, and Level 3 required respondents to perform a series of numerical operations. The numeracy skills measured reflect not only the ability to perform numeric operations but also to apply them within the context of the written document; that is, to follow the directions, whether implicit or explicit, which tell the reader what to do.

The results: Reading skills

Two-thirds of Canadians meet everyday requirements

The majority of adult Canadians, a full 62%, have reading abilities that enable them to deal with most everyday reading requirements (Level 4). The real significance of this finding is that their skills enable them to acquire further knowledge using written materials.

However, 16% of Canada's adults – 2.9 million – possess reading skills too limited to allow them to deal with much of the written

material they encounter every day. This group includes individuals whose abilities are classified at Levels 1 (5%) and 2 (9%), as well as people who did not attempt the test because they reported having no abilities in either English or French (2%).

Meanwhile, a further 22% of adults – 4.0 million – fall between proficiency and limited ability. They can carry out simple reading tasks within familiar contexts with materials that are clearly laid out (Level 3). However, they do not have sufficient skills to cope with more complex reading tasks, such as reading a chart defining eligibility requirements for an employee benefit plan.

Across all four categories, there is no significant difference in the proportion of men and women exhibiting the same level of skill.

High school completion is key to good reading skills

The LSUDA shows a strong relationship between secondary school completion and everyday reading skills. Only 8% of Canadians with high school completion are at

Levels 1 and 2, while 70% have skills that permit them to meet daily demands.

An even larger percentage of Canadians with postsecondary training possess the highest level of reading proficiency. The great majority of Canadians who attended university (89%) or community college (81%) have reading skills estimated at Level 4. This percentage increases to 93% for university graduates with a bachelor's degree or above, and to 84% for those holding a community college diploma or certificate.

Higher reading skills found among younger Canadians

The effect of the emphasis now placed on education, compared to several generations ago, can be seen in the literacy rates for the different age groups. Close to three-quarters of young Canadian adults aged 16 to 34 possess sufficiently well-developed reading skills to deal with most written material encountered in daily living. Among those aged 55 to 69, however, the proportion drops to about one-third.

Table 1
Percentage distribution of persons aged 16 to 69 by reading skill levels, Canada and provinces, 1989

	Population	Reading skills			
		Level 1	Level 2	Level 3	Level 4
	'000	%			
Canada	18,024	7	9	22	62
Atlantic	1,546	6	13	30	52
Newfoundland	384	7	17	36	39
Prince Edward Island	85	--	--	--	--
Nova Scotia	594	5	10	28	57
New Brunswick	483	6	12	26	56
Quebec	4,721	6	13	25	57
Ontario	6,689	9	8	21	62
Prairies	2,984	4	7	19	70
Manitoba	703	5	7	23	65
Saskatchewan	632	3	5	19	72
Alberta	1,649	4	7	17	71
British Columbia	2,084	5	7	19	69

Source: Survey of Literacy Skills Used in Daily Activities

Table 2

Percentage distribution of Canadian adults aged 16 to 69 by highest level of schooling, showing reading skill level, Canada, 1989

	Population	Reading skills			
		Level 1	Level 2	Level 3	Level 4
	'000	%			
Canada*	17,705	5	10	22	63
No schooling or elementary	1,818	27	33	28	12
Some secondary	4,427	3	13	35	48
Secondary completed	4,181	--	6	22	70
Trade school	1,133	--	--	25	63
Community college	2,458	--	--	15	81
University	3,456	--	--	8	89

Source: *Survey of Literacy Skills Used in Daily Activities*

* Total includes "Not Stated" level of schooling.

The strong relationship between educational attainment and reading proficiency is illustrated in the performance of those who took the test in English compared with those who took it in French: only 13% of English-speaking respondents are classified at Levels 1 and 2 compared with 18% of the French-speaking respondents. Closer examination of the pattern shows that age is likely the reason for this discrepancy. There are no significant differences between the language groups among those aged 16 to 24; it is the inclusion of the older adults that pushes down the rate obtained for the French-speaking respondents. The only apparent reason for this is that a smaller proportion of the older Canadians who took the French test had completed high school.

Surprisingly, almost one-quarter of the youngest adults, aged 16 to 24, only have abilities classified at Level 3. This may be due in part to the type of documents used in the test, which are probably more familiar to older adults, who encounter them day to day, than to younger Canadians, who lack experience in dealing with them.

The results: Numeracy skills

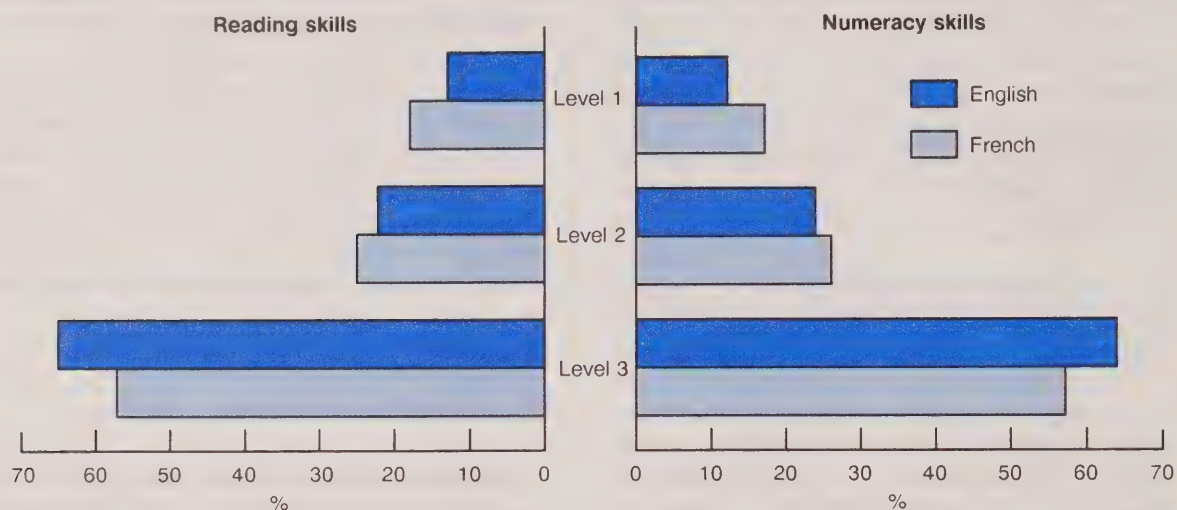
Given the structure of the test, in which respondents had to read instructions in order to perform the numeracy tasks, it is not surprising that the numeracy profile of Canadian adults virtually mirrors the reading profile.

The majority of adults, 62%, have numeracy skills advanced enough to deal with printed material requiring a sequence of numerical operations (Level 3). Skills at this level allow Canadians to meet the numeracy demands of most everyday documents. But almost one in seven Canadian adults – 14% – have limited numeracy abilities (Level 1); they can locate and recognize numbers in isolation or in a short text, but they cannot perform numerical operations consistently.

As was the case with reading skills, about one-quarter of Canadians fall between the two extremes: they possess the necessary skills to deal with commonly encountered documents and perform simple numerical operations such as addition and subtraction (Level 2).

Reading and numeracy skills by language, 1989

Those who took the test in English attained higher skills levels, due to the greater proportion of high school graduates among these respondents.



Source: Survey of Literacy Skills Used in Daily Activities

Note: For charting purposes, Levels 1 and 2 reading skills have been combined to form Level 1.

Table 3

Percentage distribution of persons aged 16 to 69 by numeracy skill levels, Canada and provinces, 1989

	Population	Numeracy skills		
		Level 1	Level 2	Level 3
	'000		%	
Canada	17,206	14	24	62
Atlantic	1,497	24	24	52
Newfoundland	369	29	26	45
Prince Edward Island	79	--	--	--
Nova Scotia	581	21	23	56
New Brunswick	468	22	24	54
Quebec	4,577	19	27	54
Ontario	6,228	11	25	64
Prairies	2,888	10	22	68
Manitoba	678	13	26	61
Saskatchewan	620	9	26	65
Alberta	1,589	8	20	72
British Columbia	2,015	9	22	70

Source: Survey of Literacy Skills Used in Daily Activities

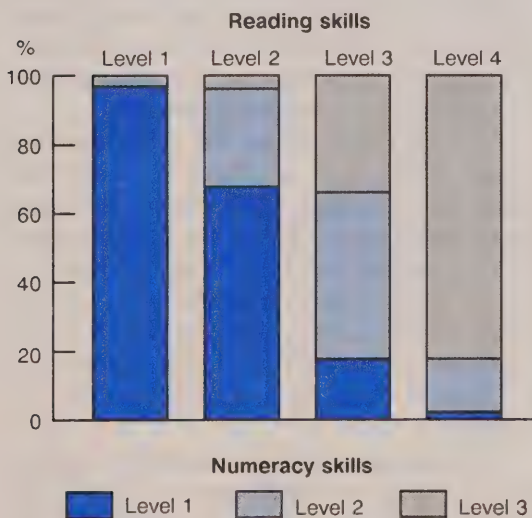
Numeracy closely associated with reading

As might be expected, not only are the general population profiles of numeracy and reading ability similar, one skill is closely linked to the other. Canadian adults with limited reading abilities also have weak numeracy skills: 97% of Canadians at reading Level 1 and 68% of those at reading Level 2 have only Level 1 numeracy skills. Furthermore, only 34% of Canadians with reading skills at Level 3 have numeracy abilities sufficient to meet most everyday demands (Level 3).

It is interesting to note that 18% of Canadians with reading skills assessed at Level 4 do not achieve Level 3 numeracy abilities. Explaining this anomaly requires further analysis.

Relationship between reading and numeracy skills, 1989

Skills needed to read and to perform arithmetic functions are interdependent.



Source: Survey of Literacy Skills Used in Daily Activities

Numeracy skills closely linked to level of schooling

Having strong numeracy skills is clearly related to the individual's level of schooling. A full 83% of adult Canadians who had attended university were assessed as having Level 3 abilities, but almost half (46%) of those who reported elementary schooling or less had limited numeracy skills (Level 1 abilities). Further confirmation of this pattern can be seen at the secondary school level: 65% of secondary school graduates were categorized at Level 3 numeracy, compared with 47% of those who had not completed their secondary education.

Highest functional numeracy found among those aged 25 to 34

One in seven young adults – 14% of those aged 16 to 24 – was assessed as having limited numeracy abilities (Level 1). A further 25% only have sufficient skills to perform a simple numerical operation (Level 2). Yet this was observed among those who had most recently attended an educational institution.

Numeracy abilities are strongest among adults aged 25 to 34, with 69% of them classified at Level 3. The differences between the two age groups may be explained in part by the more limited exposure to everyday printed material among the youngest adults.

Literacy skills highest in the West

A definite geographic pattern can be observed in both reading and numeracy proficiency. The proportion of Level 4 readers is highest in Western Canada, and declines steadily from west to east. Future research might show that this is related to the migration patterns of the past decades, in which younger and better-educated Canadians moved west seeking more advantageous economic opportunities.

Table 4

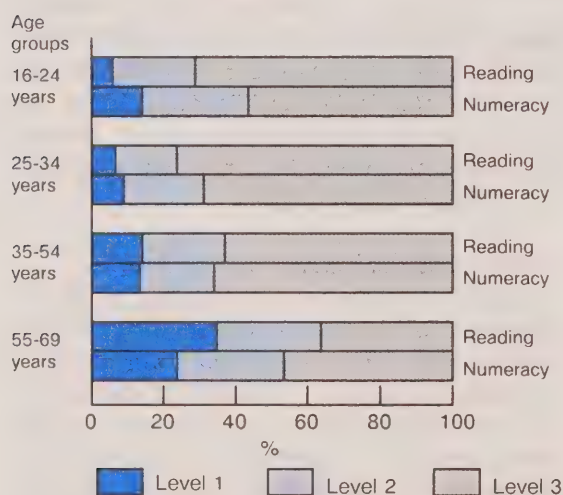
Percentage distribution of persons aged 16 to 69 by highest level of schooling, showing numeracy skill level, Canada, 1989

	Population	Numeracy skills		
		Level 1	Level 2	Level 3
	'000	%		
Canada	17,206	14	24	62
No schooling or elementary only	1,518	46	32	22
Some secondary	4,363	20	33	47
Secondary completed	4,123	10	26	64
Trade school	1,095	12	23	65
Community college	2,446	5	19	76
University	3,451	3	14	83

Source: Survey of Literacy Skills Used in Daily Activities

Reading and numeracy skills by age group, 1989

The high proportion of young adults with lower skills levels is probably due to their unfamiliarity with everyday documents.



Source: Survey of Literacy Skills Used in Daily Activities

Note: For charting purposes, Levels 1 and 2 reading skills have been combined to form Level 1.

Well over two-thirds of Canadians aged 16 to 69 in British Columbia, Alberta and Saskatchewan have Level 4 reading skills; British Columbia (70%) and Alberta (72%) also claim the highest proportions of numerically proficient adults. Reading results from Manitoba and Ontario indicate that 65% and 62% of their adult populations respectively have Level 4 abilities, and over 60% possess numeracy skills that enable them to meet most everyday demands.

Proficiency drops in the eastern regions of Canada. In Nova Scotia, New Brunswick and Quebec, between 15% and 20% of adults read at Level 1 or 2, while close to 57% exhibit the full range of Level 4 reading skills. Newfoundland, with almost one-quarter of its population at Levels 1 and 2 and another one-third at Level 3, registers the lowest estimated reading skills in Canada.

Consistent with the results of reading skills, the highest distribution of Canadians with limited functional numeracy skills (Level 1) is found in the east, with percentages ranging from 29% for Newfoundland to 19% for Quebec.

Higher income associated with higher literacy levels

It is difficult to assess the dollar cost of inadequate literacy skills – lost competitiveness, some industrial accidents, unemployment, poverty. Attempts by some researchers to quantify the loss both to business and to society have produced widely differing estimates. However, survey results show that people with limited literacy skills earn less than those with stronger abilities.

In general, a higher proportion of Canadians with above average incomes exhibit greater reading abilities. Only half of those with an income of \$10,000 or less tested at a Level 4 reading ability, while more than four-fifths of those with incomes over \$40,000 possess Level 4 skills.

This finding is not surprising. Many studies have shown that there is a strong positive relationship between education and income. So it might be expected, given the positive connection between literacy and education, that there is also a strong link between literacy and income.

Conclusion

The LSUDA results show that a majority of Canadian adults – two in every three – have reading and numeracy skills that are sufficiently well-developed to enable them to function capably at work, at home and in the community.

Another one-quarter have a more limited capacity, but are still able to function in a less demanding environment in which the materials they must read or calculate are familiar.

However, a significant minority of Canadian adults struggle with basic literacy tasks: 16% have difficulty reading and 14% have trouble performing numeric functions.

Proficiency diminishes with age and it rises with educational qualifications. Literacy rates decline steadily from west to east: the highest literacy levels are recorded in British Columbia, Alberta and Saskatchewan and the lowest are reported in Newfoundland. □

LSUDA methodology: Assessing literacy in Canada

Identifying literacy skills

Recent research suggests that functional literacy is dependent on two connected skills: how to decode relatively small, but not necessarily related, chunks of text or numbers; and how to apply the information gained from reading that text to solve a problem. Thus, any assessment of functional literacy must take into account both decoding and decision criteria.

Furthermore, it is generally recognized that functional literacy skills do not fall neatly into categories, but rather form a continuum. At the same time, certain points along the continuum are worthy of particular attention because they reflect significant differences in literacy abilities. The literacy levels used by the LSUDA are simply points along the continuum that should be useful in identifying the types of programs and services needed to deal with Canada's literacy problem.

Choosing and scoring the test items

The LSUDA designers chose certain points along the literacy continuum in order to guide the development of test items. For example, items that were to distinguish the difference between Level 1 and Level 2 reading skills required only the ability to recognize and point out key words or short phrases in the text.

Since the LSUDA was primarily interested in the skills that underlie and generate the responses rather than the responses themselves, a measurement system that evaluated these underlying skills was necessary.

But the nature of simple "item correct" scoring – where the item is marked right or wrong – is such that it can easily reward a lucky guess and penalize a

casual mistake. For the purposes of the LSUDA, it was important to have some ability to control for guessing and accidental errors. This was one of the several advantages of choosing Item Response Theory (IRT) for the LSUDA scoring procedures.

Selecting the levels on the continuum

The virtue of IRT is that the item difficulties and individual abilities are defined in terms of each other. To explain briefly, an item's difficulty can be defined as the level of ability an individual needs if he or she is to have a certain chance of answering the item correctly; similarly, an individual's ability is defined as the level of difficulty of those items which that individual has a certain chance of answering correctly. Because we are interested in a rigorous and realistic standard, we have defined that chance as 80%.

Therefore, an individual's level is defined as the difficulty of the most difficult item that the individual has an 80% chance of answering correctly; that is, an individual's level is the highest level at which he or she can perform consistently.

At the same time that the levels were set, a technique known as cluster analysis was used to group the literacy test items. This type of analysis uses several statistical verification procedures to find the most natural groupings of objects, in this case the test items. The groups of items thus derived matched those formulated by the theory adopted by the test's designers. This convergence of evidence demonstrating that the levels chosen are appropriate strengthened confidence that they had been properly identified.

A detailed methodological report on the design and scoring technique used by the LSUDA is available from the authors.

Recent trends in wages

Philip Smith

For the first time in several years, workers have seen their earnings rise more rapidly than consumer prices. Wage and salary increases gained momentum in 1988 and 1989, after several years of slow growth, and this trend continued in the first half of 1990.

Remembering the inflationary spiral of the 1970s and early 1980s, when annual wage and price increases reached double digits, policy analysts have viewed the situation with some concern. Particularly worrisome are the effects of larger wage increases on unit labour costs and, consequently, on the international competitiveness of Canadian business.¹ This pickup in wages, combined with other factors, led to a tightening of monetary policy. Recently, some commentators have even suggested that the government consider reinstituting a form of incomes policy, similar to the "Anti-Inflation Program" of 1976-78 or the "6 and 5 Program" of 1982-83, to deal with what they see as a problem.²

This study addresses three topics related to the recent pickup in wage inflation. It begins with a quick review of the available data sources on worker compensation and considers their suitability as measures of labour costs in the Canadian

economy. Next, it describes a comparatively new fixed-weight earnings data set, derived from an already available source, and explains why these new data are superior for gauging the cost of labour as a factor of production of goods and services. Finally, the study examines the recent acceleration in wage rates, using the new data set.

Measures of labour compensation

The ideal source of data on the price of labour would be a broadly based survey of total labour compensation for well-defined occupations in specific industries and geographic regions. Unfortunately, no such source is currently available in Canada,³ although the U.S. Employment Cost Index provides an excellent model for such a survey.⁴ In Canada, aggregate wage changes must be studied indirectly, using time series data which, although related, are less than ideal. The available data on labour compensation come chiefly from three sources:

- Labour Canada's data on negotiated increases in base rates in collective agreements;
- Statistics Canada's estimates of wages, salaries and supplementary labour income;
- Statistics Canada's Survey of Employment, Payrolls and Hours (SEPH).

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The first source, Labour Canada's compilations from collective agreements, provides reliable data on changes in base wage rates. These changes are calculated from labour contracts and then aggregated using employment weights. The data present an accurate overall picture of wage rate changes within their domain and are available on a consistent basis over a long period. However, these data are incomplete since they apply only to unionized workers and, within that group, only to workers covered by major collective agreements involving 500 or more employees. The tabulations use the contract base wage rate exclusively, that is, the wage applying to the lowest paid classification for workers in the bargaining unit. Contracts containing escalator or cost-of-living allowance clauses (COLAs) are valued initially using specified forecast inflation rates and are revised sub-

sequently to reflect the actual inflation experience. The effective wage increase is calculated as a compound annual average rate over the life of the contract.

The second source, the estimates of wages, salaries and supplementary labour income in the national accounts, is based primarily on income tax records. At the end of the calendar year, all employers are required to submit T4 forms to Revenue Canada-Taxation. These forms provide information on company payrolls and personal income tax deductions that were remitted from employees regularly through the year. Quarterly and monthly estimates of labour income are derived by distributing and projecting the annual tax data with related series, most of which originate in SEPH and the Labour Force Survey. The labour income estimates provide comprehensive information on employment compensa-

Table 1
Annual percentage change in several wage rate indicators

	1985	1986	1987	1988	1989	1990*
Labour Canada indicators						
Base wage rate settlements						
Commercial sector	3.6	3.1	3.9	4.6	5.1	5.7
Non-commercial sector	3.7	3.6	4.2	4.1	5.4	5.5
All industries	3.7	3.4	4.1	4.4	5.3	5.6
National accounts indicators						
Labour income per employee						
Wages and salaries	4.9	3.9	5.6	6.2	6.9	6.6
Supplementary labour income	6.3	3.5	7.6	5.6	4.9	14.1
Total labour income	5.0	3.8	5.8	6.1	6.6	7.4
SEPH-based indicators						
Average hourly earnings						
Hourly-paid employees	2.8	2.4	2.3	4.5	5.4	5.3
Salaried employees	4.6	4.4	3.4	4.7	5.4	6.3
All employees	3.6	3.3	2.6	4.5	5.4	6.0
Fixed-weight average hourly earnings						
Hourly-paid employees	2.9	3.0	3.4	4.2	5.2	5.3
Salaried employees	4.8	4.2	3.9	4.7	5.1	6.2
All employees	3.9	3.7	3.7	4.5	5.2	5.8

Sources: Labour Canada and Statistics Canada's National Income and Expenditure Accounts and Survey of Employment, Payrolls and Hours

* Data for 1990 are for the first seven months of the year, compared with the same period for 1989.

tion but no information on actual wage rates. Dividing labour income by employment estimates yields another indicator of the overall trend in wage rates which, although comprehensive, must be interpreted very carefully. The chief difficulty with this indicator is that its movements can be dominated by the effects of compositional changes within and between industries, regions and occupational groups, between straight-time and overtime work, and between different kinds of labour compensation.⁵ (See *Average hourly earnings from SEPH*.)

The last source of labour compensation data is SEPH. This monthly survey of employers is designed to measure the levels and month-to-month changes in employment, paid hours and earnings. SEPH data are available from March 1983 and at detailed industrial and geographic levels. All industries are covered by SEPH except agriculture; fishing and trapping; private household services; religious organizations; and military services. SEPH questionnaires are mailed each month to all large reporting units and to a sample of the smaller units. Overall, about 70,000 units are surveyed out of a universe of 700,000.⁶

Although SEPH does not collect data on actual wage rates, the information it gathers on employment, hours worked and payrolls can be used to derive measures of average weekly and hourly earnings. However, while earnings measures of this type are closely associated with wage rates, they are imperfect indicators of total labour compensation for two reasons. First, they exclude many compensation elements that are not directly reflected in the payrolls of firms. Benefits such as employer-financed health plans (for example, dental plans), pension funds and severance pay fall into this category. Second, average earnings measures are subject to compositional change effects that are potentially misleading.

The last problem can be partially corrected by using a fixed-weight aggregation of average earnings. The next part of this study describes a set of SEPH-based fixed-weight earnings statistics of this kind; these data are the main source of information used in the final part of this article.

Fixed-weight average hourly earnings

A set of fixed-weight average hourly earnings (AHE) series has been constructed to deal with the problem of changes in the composition of employment.⁷ These series are computed from the AHE data, excluding overtime payments. Overtime compensation is omitted because it is an important source of compositional change in some industries. Salaried as well as hourly-paid employees are included, with the assumption that the former work their "standard workweek".⁸

The fixed weights for the new series are calculated using SEPH employee paid hours data from the 1987 calendar year (the base year for this series). Separate weights are applied for 258 three-digit industry categories as defined in the 1970 Standard Industrial Classification.⁹ The fixed-weight series are therefore unaffected by shifts in employment composition among these industries. Fixed weights are also applied separately within each of the provinces and territories, so that differential employment growth rates among these regions will not be a source of compositional variation in the fixed-weight series for Canada.

Finally, fixed weights are also used for employees paid by the hour and salaried employees. These two types of labour can be interpreted as very broad occupational classifications (similar to production and non-production workers).¹⁰ Significant weight shifts between these two categories could occur over a full business cycle. For example, employers may retain highly qualified salaried workers during recessions

Average hourly earnings from SEPH

Average hourly earnings (AHE) data from the Survey of Employment, Payrolls and Hours (SEPH) are computed for hourly-paid personnel by dividing total earnings by total paid hours. This series is often used as an indicator of movements in the price of labour. However, it has one important limitation when used for this purpose: its movements can be influenced by compositional shifts. The overall AHE series are variable-weight indexes, in the sense that AHE data for particular industries, regions and employee categories are aggregated to higher industrial and regional levels using current rather than fixed employee paid hours weights.

The essence of this mix problem is as follows. Some industries, regions, or occupations pay relatively high wage rates and others pay relatively low wage rates. When employee paid hours expand more (or less) rapidly in the high-wage categories than in the low-wage categories, overall AHE will tend to grow more (or less) rapidly than underlying wage rates. The difference is potentially important; increases in AHE caused by compositional changes are not related to price increases for goods and services, whereas AHE increases caused by growth in underlying wage rates may well be.

in order to avoid delays when work activity recovers. The remaining "other" employee category reported by SEPH is excluded from the fixed-weight series. This category includes persons paid solely by commissions, piece rates, mileage allowances and similar remuneration and accounts for about 7% of total employment.

The limitations of the fixed-weight series must certainly be recognized. First, these series are not comprehensive since SEPH does not take into account non-wage fringe benefits such as employers' contributions to pension funds or health and insurance programs. Second, while the series exclude the effects of compositional change between the 258 industries, the provinces and territories and two employee categories, they cannot hold employment composition fixed within any of these categories. For example, changes in occupational mix within one of the two employee categories (salaried and hourly-paid employees) will continue to affect the series. Shifts in em-

The following example shows how significant the mix effect can be. Suppose, for simplicity, that there were only two industries in the economy, which might be called the "goods" industry and the "services" industry. Assume that half the employees worked in the "goods" industry and the other half worked in the "services" industry. Suppose also that all employees working in the "goods" industry received \$15 per hour regardless of their occupation or the region they worked in, and that all employees in the "services" industry received \$10. If all wage rates increased by 5% over a particular period in both industries, and if there were no compositional changes, then average hourly earnings would also rise by 5%.

But, suppose employee paid hours in the "goods" industry fell by 5% during the period, while paid hours in the "services" industry rose by 5%. Then overall average hourly earnings would rise only by about 4% even though all wage rates had increased by 5%. If the compositional change were 10% rather than 5%, the increase in total average hourly earnings would only be about 3%. Similarly, a faster-than-average employment increase in the high-wage sector would give the illusion that wages were increasing by more than 5%. As this example shows, the effects of compositional change on AHE growth rates can be substantial.

ployment between sub-regions within a given province are also still present. Finally, the choice of 1987 as the base year for the series is arbitrary and the use of other years could, in principle, alter some aspects of the results significantly. This particular year was selected for two reasons: it is the first year following a major sampling "break" that occurred in SEPH beginning in January 1987,¹¹ and it was a fairly typical year in Canada's labour market.

As a practical matter, the variable-weight and fixed-weight earnings series are unlikely to diverge dramatically, at least during normal periods. However, even seemingly small variations in growth between the two measures, such as the two percentage point cumulative difference between 1985 and 1987 (Table 1), can have important implications for the competitiveness and expansionary potential of the economy. In the following section, the fixed-weight AHE series are applied in an analysis of recent Canadian wage rate experience.

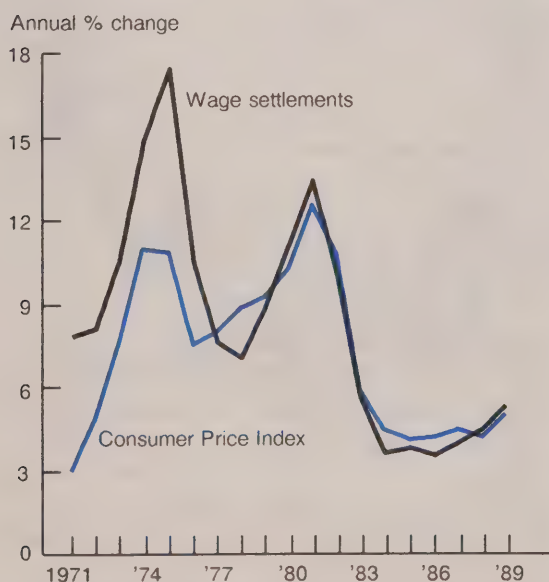
Recent trends

Wage and price increases both dropped sharply after the 1982 recession, levelling off at about 4% annually between 1984 and 1987. Since then they have been edging up again. The rate of increase in wages was slightly below the inflation rate through the middle years of the decade, but has been somewhat higher since 1988.

The quickening pace of wage increases began in the second half of 1987, when the economy was growing at an extremely rapid rate.¹² Wage inflation advanced from about 3.5% in mid-1987 to over 4.5% by mid-1988, by which time wages were rising more rapidly than consumer prices. In early 1989, prices began to accelerate as well. In concert with wages,

Wage and price changes

During the 1980s, wages and prices generally followed similar paths.



Sources: Consumer Price Index and Labour Canada

Wage and price changes

Hourly earnings rose more rapidly than consumer prices in 1988 and 1989, after several years of lagging.



Sources: Canadian Economic Observer and Consumer Price Index

price inflation jumped to the 5%-5.5% range by mid-1989. It then stabilized and more recently has edged down somewhat, while wage increases have remained in the 5.5%-6% range.

Hourly-paid workers' earnings have been more responsive to economic forces than those of salaried workers. This is not surprising, since hourly-paid labour is typically less skilled and employers' hiring and termination costs are lower than for salaried employees. The rate of increase of wages for hourly-paid employees dropped quite sharply in 1984, fluctuated in the 2.5%-3.5% range in 1985 and 1986, and in early 1987 began a gradual but steady upward climb. This rise continued until late 1989, when wage growth appeared to have

Wage change by employee type

Over the last five years, wage gains for salaried employees have generally exceeded those of hourly-paid personnel.

Year-over-year % change



Source: Survey of Employment, Payrolls and Hours

stabilized in the 5% to 6% range. Compensation increases for salaried employees, on the other hand, slowed more gradually through the mid-1980s, increased in early 1988 and surged to around 6% over the most recent 12 months.

Wage increases in the goods-producing sector fluctuated around 3% through much of 1986, edged up to the 3.5%-4% range in 1987, and in 1988 began a steep climb to their mid-1990 rate of about 5.5%. The services sector saw wage increases bottom out in the 3%-3.5% range in mid-1987 and then move upward to about 5% by mid-1988. They dropped back to around 4.5% by early 1989 before resuming their ascent to the current 6% range.

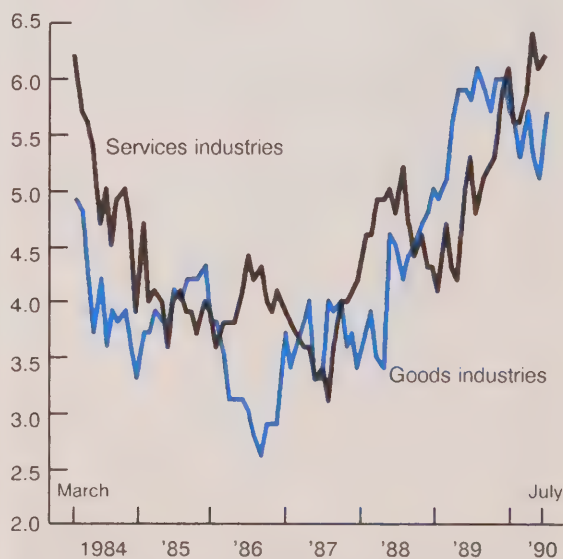
In the goods sector, wage increases picked up in 1988 in all industries except construction and forestry, where they moderated. Last year, they saw a further jump, with construction, forestry, and mines, quarries and oil wells recording particularly large increases.

Among the services industries, the largest wage increases occurred initially in finance, insurance and real estate. Wage growth jumped from about 3.5% in late 1986 to over 7% by the spring of 1988. Then the fallout from the stock market crash in October 1987 and the slowdown in residential construction that began around the same time, quickly put a damper on wage growth – by late 1988 the pace of wage inflation had moderated considerably. Lower increases

Wage change by sector

Until 1989, wage increases in the goods sector were generally smaller than those in the services industries.

Year-over-year % change



Source: Survey of Employment, Payrolls and Hours

Table 2
Annual percentage change in wages by industry and province

	1985	1986	1987	1988	1989	1990*
By industry						
Goods-producing industries	3.9	3.1	3.7	4.1	5.8	5.5
Primary industries	4.7	2.0	2.3	4.5	6.2	5.5
Forestry	0.8	2.2	3.5	2.4	4.6	3.9
Mines, quarries and oil wells	5.7	1.9	2.0	5.0	6.7	5.9
Manufacturing	4.4	3.7	3.7	4.1	5.4	5.7
Durable goods	4.0	3.8	3.6	4.0	5.5	6.2
Non-durable goods	4.8	3.7	3.9	4.2	5.3	5.1
Construction	1.9	1.3	4.4	4.0	6.8	5.0
Services-producing industries	4.0	4.0	3.7	4.7	4.9	6.0
Transportation and related industries	3.6	3.3	2.4	3.3	3.7	4.6
Total trade	3.1	5.1	3.7	4.2	4.9	5.7
Retail trade	2.8	4.9	3.1	4.4	4.4	4.7
Wholesale trade	3.6	5.3	4.5	3.7	5.7	7.2
Finance, insurance and real estate	7.0	4.1	5.1	6.0	5.1	6.5
Community, business and personal services	4.3	3.7	3.8	5.0	5.0	6.0
Public administration	2.7	4.2	3.8	4.9	5.3	7.5
All industries	3.9	3.7	3.7	4.5	5.2	5.8
By province						
Atlantic Canada	4.4	3.6	4.1	4.0	5.0	6.0
Newfoundland	2.6	3.9	5.2	4.4	5.7	4.8
Prince Edward Island	4.1	3.4	6.3	5.9	5.6	6.4
Nova Scotia	5.3	3.9	4.1	3.7	4.7	7.5
New Brunswick	4.6	3.2	2.9	3.8	5.0	4.9
Quebec	4.1	3.2	3.7	4.9	3.9	5.4
Ontario	4.7	5.1	4.6	5.1	5.9	6.4
Prairies	2.5	2.4	2.0	3.0	4.8	5.0
Manitoba	3.3	3.3	2.7	4.0	4.2	4.1
Saskatchewan	2.9	2.0	2.9	1.3	4.5	4.3
Alberta	2.1	2.2	1.5	3.0	5.1	5.5
British Columbia	2.6	1.5	2.2	3.6	5.4	5.8
Northwest Territories	4.1	3.4	5.7	3.3	4.3	5.5
Yukon	5.4	2.4	2.2	5.3	7.1	2.2
Canada	3.9	3.7	3.7	4.5	5.2	5.8

Source: SEPH-based fixed-weight average hourly earnings.

* Data for 1990 are for the first seven months of the year, compared with the same period for 1989.

continued until mid-1989, when renewed upward movement became evident. By early 1990, increases of about 6.5% range were once again prevalent in finance, insurance and real estate.

Community, business and personal services, and public administration have also experienced substantially higher wage increases over the past two to three years, and in recent months the pace has risen

above 6%. In the latter case, particularly large wage gains occurred in Atlantic Canada, Saskatchewan and Alberta, beginning about the middle of 1989. On the other hand, the transportation, storage, communication and utilities industry, and the retail trade industry have both had rates of wage increase well below the average for several consecutive years, especially in Western Canada.

The wage acceleration (and the pick-up in consumer price inflation) has been led by Ontario. Some regional convergence is evident lately, since both Atlantic Canada and Western Canada have experienced more rapid wage inflation. But Ontario continues to lead with wage increases averaging 4.6% in 1987, 5.1% in 1988, 5.9% in 1989 and 6.4% in the first half of 1990. The other provinces and territories, except for Prince Edward Island and the Yukon, have had much smaller increases until very recently. In most of Atlantic Canada, wage increases languished around 4% until mid-1989, when they jumped to the 5.5%-6% range, despite continuing high unemployment rates. Pay increases in Quebec were under 5% throughout the 1985-89 period but have moved slightly above that threshold in 1990. In Western Canada, wage increases slipped well below 3% in the mid-1980s. Depressed world markets for natural resources, particularly oil and gas, underlay this development. As Western Canada's economy gradually began to recover, wage increases moved up to the 3%-4% range in 1988 and above 5% in the second half of 1989 and early 1990.

Conclusion

Wage rates need to be monitored closely because they are such important indicators of the economy's health. SEPH-based fixed-weight average hourly earnings statistics are the best available comprehensive indicator of changes in wage rates. These data reveal that over the past two to three years wage increases have picked up significantly, from a steady 3.5%-4% in 1985-87 to 5.5%-6% in 1990. The acceleration has been closely associated with strong economic growth, initially in Ontario and more recently in other regions of the country as well. Both goods and services industries have reflected the trend of higher wage increases.

The more commonly used variable-weight average hourly earnings data, published with the monthly SEPH data release, provide a picture of recent wage trends that is generally similar, with some important differences. These differences are due to employment growth differentials, both industrial and regional. In the mid-1980s, two of the lowest-wage industries – retail trade, and community, business and personal services – recorded above-average growth in employee paid hours. At the same time, some of the high-wage industries, notably transportation and related industries and primary industries, experienced below-average growth. These divergent trends caused average hourly earnings to grow less rapidly than the fixed-weight series during the 1985-87 period. The relative weakness of employment growth in the western provinces, where wages are comparatively high, also contributed to this divergence. More recently, rapid growth in high-wage industries, such as public administration and construction, particularly in Alberta and British Columbia, coupled with slower growth in retail trade, has caused the reverse phenomenon: average hourly earnings have risen more rapidly than the fixed-weight series.

In sum, the statistical evidence on trends in wages shows a gradual but significant upturn over the past three years, with wages now rising somewhat more rapidly than prices. The wage pickup is visible both in the usual variable-weight earnings measure and in the relatively new fixed-weight indicator, and has affected most provinces and industries of Canada. The implications of this developing trend will depend on how long it persists, and on how soon productivity growth resumes at a stronger pace. □

Notes

¹ See, for example, A. Sharpe, *Perspectives on Labour and Income* (Summer 1990); H. Solomon, *The Financial Post* (June 4, 1990); and D. Fagan, *The Globe and Mail* (June 6, 1990).

² See, for example, J. Vardy, *The Financial Post* (May 22, 1990); and T. Rutley, *Bulletin of the Canadian Manufacturers' Association* (1990).

³ Organizations such as the federal Pay Research Bureau and some private sector consultants specializing in the field of labour compensation collect data on occupational wage rates, but the information is not comprehensive and is not suitable for aggregate time series analyses. Two other larger and more comprehensive surveys of labour compensation, Labour Canada's Wage Rate Survey and Statistics Canada's Labour Costs Survey, were both terminated several years ago as cost-saving measures.

⁴ The U.S. Employment Cost Index is published quarterly and is based on a sample of about 4,200 private non-farm establishments and 800 state and local government establishments. It is fixed-weight and is derived from a detailed review of specific occupational categories in each of the sampled establishments. The 5,000 establishments in the sample provide some 26,200 carefully specified occupational observations from which the index is computed. For more information on the Employment Cost Index, see Bureau of Labor Statistics, "Notes on Current Labor Statistics" and Tables 22-25, *Monthly Labor Review*.

⁵ For a discussion of these issues, see H. Pold and F. Wong, *Perspectives on Labour and Income* (Autumn 1990).

⁶ Although Survey of Employment, Payrolls and Hours data are available only from 1983 on, data from a similar survey are available for the preceding period. See Statistics Canada, *Employment, Earnings and Hours*.

⁷ The fixed-weight average hourly earnings series are described more fully in P. Smith, *Canadian Economic Observer* (1989). The data are available on a monthly basis in the regular *Canadian Economic Observer* tables and in the CANSIM data bank numbers D99995 through D100026. They are also available on diskette in greater detail, and on a monthly basis from the author.

⁸ The SEPH questionnaire defines the standard workweek as "the average number of hours of work normally scheduled in a workweek".

⁹ All SEPH tabulations are currently based on the 1970 Standard Industrial Classification. SEPH will be converted to the 1980 SIC in the coming year.

¹⁰ The SEPH questionnaire does not collect any other information on the occupational dimension of employment and earnings, so it is not possible to have fixed occupational weights.

¹¹ In 1987, SEPH's estimation methods were substantially revamped and new weights were assigned to the survey frame. This reweighting caused an important compositional effect of the type referred to earlier in the text. For details, see Statistics Canada, *Employment, Earnings and Hours*.

¹² Real gross domestic product grew at a 6.4% compound annual rate in the second half of 1987, more than double the 3.1% average annual growth rate for the decade as a whole.

References

Bureau of Labor Statistics. "Notes on Current Labor Statistics." *Monthly Labor Review*, Vol. 113, No. 4, Washington, D.C., April 1990, pp. 50-100.

Fagan, D. "Wilson Admits He's Unhappy With the Level of Wage Settlements." *The Globe and Mail*, National edition [Toronto], June 6, 1990, p. B4.

Labour Canada. *Major Wage Settlements*. Quarterly, Ottawa: Bureau of Labour Information, 1989.

Pold, H. and F. Wong. "The Price of Labour." *Perspectives on Labour and Income*, Catalogue 75-001E, Autumn 1990. Ottawa: Statistics Canada, pp. 42-49.

Rutley, T. "Short-Term Pain and Long-Term Pain." *Bulletin of the Canadian Manufacturers' Association*, Toronto, May 1, 1990.

Sharpe, A. "Measuring Canada's International Competitiveness." *Perspectives on Labour and Income*, Catalogue 75-001E, Summer 1990. Ottawa: Statistics Canada, pp. 9-18.

Sheifer, V.J. "Employment Cost Index: A Measure of Change in the 'Price of Labor'." *Monthly Labor Review*, Vol. 98, No. 7, Washington, D.C., July 1975, pp. 3-12.

References – Concluded

Smith, P. "A New Indicator of Trends in Wage Inflation." *Canadian Economic Observer*, Monthly, Catalogue 11-010, September 1989. Ottawa: Statistics Canada, pp. 5.1-5.20.

Solomon, H. "High Labor Costs Cutting Ability to Compete." *The Financial Post*, Daily edition [Toronto], June 4, 1990, p. 9.

Statistics Canada. *National Income and Expenditure Accounts*. Quarterly, Catalogue 13-001. Ottawa.

---. *The Consumer Price Index*. Monthly, Catalogue 62-001. Ottawa.

---. *Employment, Earnings and Hours*. Monthly, Catalogue 72-002. Ottawa.

---. *Estimates of Labour Income*. Quarterly, Catalogue 72-005. Ottawa.

Vardy, J. "Wage Restraints Could Be Potent Weapon." *The Financial Post*, Daily edition [Toronto], May 22, 1990, p. 6.

Taxes, transfers and regional disparities

Horst E. Alter and Thomas L. Greenberg

Historically, analysts have discussed regional disparities primarily in terms of differences in per capita income between provinces. From time to time they have also used provincial differences in unemployment rates. The reasons for having made such comparisons are largely due to the availability of provincial data, the lack of data for smaller areas, and the existing provincial boundaries.¹

Within most provinces we find areas with markedly different economic structures. Economic activities in Northern Ontario differ appreciably from those along the Great Lakes. Similarly, the northern regions of the western provinces have different economic characteristics than their southern counterparts. Yet, northern Manitoba differs from northern Alberta, just as northern Saskatchewan and northern British Columbia differ in their economic make-up. Dividing provinces into sub-provincial regions (SPRs) creates areas that are more homogeneous within their boundaries than provinces; yet these regions are more heterogeneous when compared with each other.

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Differences in economic performance are usually judged on the basis of per capita income, but income can be viewed in several ways. For example, should we use income before taxes or after taxes? Should we use total income, or should we use only income that results from an economic activity - that is, "market income"? Market income omits government transfer payments and usually increases the measured degree of disparity.

However, these transfer payments provide spending power, and are specifically designed to alleviate prevailing economic hardships for individuals. If, for example, unemployment is high in a given area, one has to recognize the wage replacement value of Unemployment Insurance benefits. If an area is inhabited by a larger than average elderly population, the omission of transfers, such as Old Age Security payments with supplements and Canada or Quebec Pension Plan benefits, would reduce the per capita income disproportionately if only market income were used.

The role of transfer payments to persons in the context of regional disparities warrants a closer look. Initially, it may be useful to speak of total transfer payments (or government transfers), but transfer payments should be viewed in terms of their major components: the Old Age Security pension with the Guaranteed Income Supplement and the Spouse's Allowance; benefits from the Canada or Quebec Pension Plan; child benefits (Family Allowances and

Glossary of terms

Direct taxes include federal and provincial income taxes, contributions to the Canada or Quebec Pension Plan, contributions to federal and provincial public service pension plans, Unemployment Insurance premiums, as well as assorted fines and licencing fees. *Modified direct taxes* are direct taxes excluding contributions to federal and provincial public service pension plans.

Government transfers are more aptly described as "transfers to persons" because they exclude transfers between different levels of government. To the extent that a lower level of government disburses such monies to individuals, they are included in transfers to persons as a provincial or municipal payment. (Transfers to the corporate sector and equalization payments to provinces are excluded.) Thus, government transfers include Unemployment Insurance benefits, the basic Old Age Security (OAS), as well as the Guaranteed Income Supplement (GIS) and the Spouse's Allowance (SPA). A combination of OAS, GIS, and SPA is, for this article, called *Extended Old Age Security* (EOAS). Government transfers also include Canada and Quebec Pension Plan benefits (C/QPP). A combination of EOAS and C/QPP benefits is called *retirement transfers*. Next, there are *child benefits* which are made up of Family Allowances and Child Tax Credits.

Other transfers are derived residually by removing retirement transfers, Unemployment Insurance benefits and child benefits from total government transfers. This residual component contains Veterans' Pensions and Allowances, federal scholarships and research grants, adult occupational training allowances, and a "miscellaneous" component that contains a federal, provincial and

local (municipal) share. Also included are provincial pensions for the elderly and the blind, mothers and disabled allowances, and workers compensation receipts.

Per capita values result when area data are divided by the total population (including children) of the area concerned.

Personal income contains money receipts of all members of the personal sector and includes wages and salaries and net income from self-employment, investment income and net rents, and government transfer payments. It also contains *income in kind*, such as imputed rent of owner-occupied dwellings, and food or fuel consumed on farms out of own production. *Personal disposable income* results from the removal of direct taxes from personal income.

The *Personal sector*, which is used to measure personal income, is slightly larger than the aggregate of individuals or households. As part of the transactions of these individuals it includes the transactions of unincorporated business enterprises such as self-employed farmers, professionals or business persons. It also includes private non-commercial institutions, private pension funds and the aspect of life insurance that reflects the savings activities of individuals.

Subprovincial regions (SPRs) contain one or more counties or census divisions. There are 60 SPRs. The delineation of these SPRs is shown on an accompanying map together with the two-digit geographic code. The first digit of this code always identifies the province (from 0 for Newfoundland to 9 for British Columbia). Names and geographic codes for SPRs are shown in Table 2.

Child Tax Credits); and especially, Unemployment Insurance benefits.

The level of government transfers in regions depends on a variety of circumstances. One region may be classified as a "high transfer recipient" because it receives an extraordinarily large amount of one particular transfer component. Another region may also be considered high in transfer receipts, but its status is the result of a combination of moderate amounts of several transfer components.

Strictly speaking, the government is only an intermediary in the transfer process. It collects taxes and redistributes some of these taxes as transfer payments. Some

"taxes" are not always identified as such. They are described as "premiums" (Unemployment Insurance) or "contributions" (Canada or Quebec Pension Plan). They also include a few other marginal items (such as fees for dog licences). The System of National Accounts classifies them all as direct taxes, together with income taxes. It is this notion of taxation that is used in the analytical framework in this study.²

The taxes and transfers discussed in this article refer exclusively to those collected in the personal sector and paid directly to persons as part of the social safety net. These transfers have not come about as a result of regional development or aid

programs. They are strictly a consequence of personal needs or entitlements. However, they do result in a levelling of regional income differences.

In 1987 Canada's personal sector generated \$95 billion in modified direct taxes, while receiving \$56 billion in government transfer payments. The difference of \$39 billion went to government expenditures outside the personal transfer system. Expressed as per capita values, taxes were \$3,731, whereas transfers were \$2,206.

Per capita transfers and taxes differ noticeably across Canada's subprovincial regions, with transfers ranging from \$1,450 to \$3,256 and taxes ranging from \$1,055 to \$4,559. The composition of transfer payments within regions also diverges considerably. The maximum and minimum regional component ratios, as well as those for Canada, are shown in Table 1.

Regional tax and transfer attributes

Subprovincial regions can be described as *high* or *low* with respect to their ability to raise taxes, and their propensity to attract transfer payments. High levels of total income generate high levels of taxes, and

Table 1
Transfer component shares, 1987

	Canada	Subprovincial regions	
		Maximum	Minimum
		%	
Unemployment Insurance	18.3	49.5	8.0
Extended Old Age Security	24.9	34.5	4.7
Canada/Quebec Pension Plan	16.4	20.3	2.5
Child benefits	7.7	24.2	6.0
Other transfers	32.6	60.7	18.4

classifying a region by either tax or income levels will yield similar results.³

One also expects a relatively high level of transfer payments if income from other sources is low. Extending this income and tax relationship, one would expect high levels of transfers if taxes are relatively low.⁴

Relatively low taxes and relatively high transfers identify a *transfer dominated* region, whereas relatively high taxes and relatively low transfers characterize a *tax dominated* region. Areas where both taxes and transfers are relatively low or relatively high are *tax-transfer neutral*; that is to say, they have a transfer component compatible with the taxes they raise.

Taxes and transfers are measured *relative* to the median value of 60 SPR observations. Thus, a per capita transfer will be rated "high" if it exceeds the median value, otherwise it will be "low". The same reasoning applies to taxes. Schematically, the system of tax transfer categories can be displayed as follows:

Modified direct taxes	Government transfers		
	High		Low
	Low	Transfer dominated	Low neutral
	High	High neutral	Tax dominated

Once all SPRs have been classified according to this scheme, regions can be identified on a map and their location and proximity examined. Given each region's basic characteristic of being either transfer dominated, tax-transfer neutral, or tax dominated, their transfer composition can be studied.

Table 2
Per capita direct taxes and government transfer payments by tax-transfer category, 1987

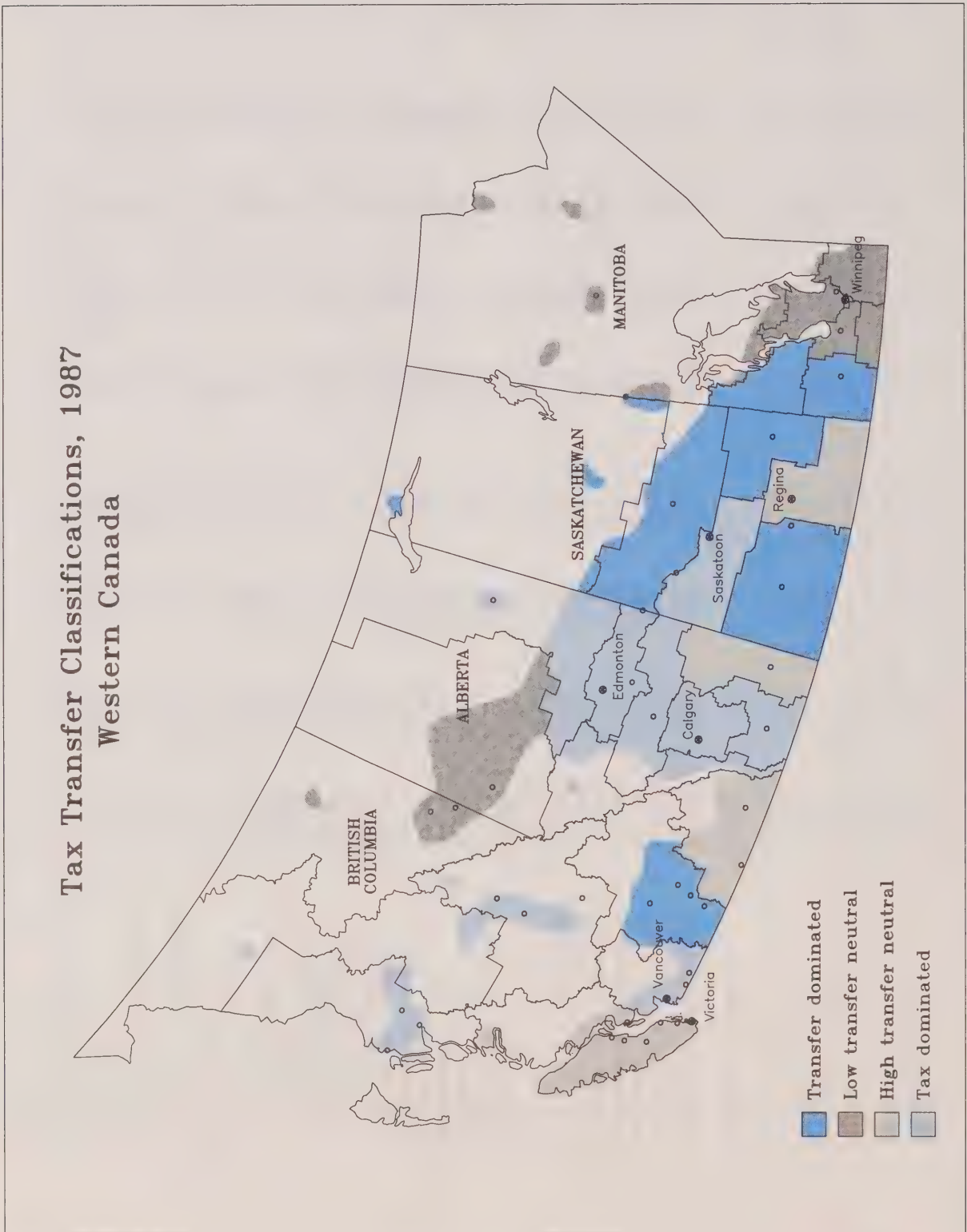
Subprovincial regions	Population*	Personal income	Modified direct taxes	All government transfers	Selected transfer components				
					U.I. benefits	EOAS	C/QPP benefits	Child benefits	No. above median
\$									
Transfer dominated	3,064,400								
00 Avalon Peninsula	246,600	13,406	2,401	2,519	937	577	284	202	2
01 South Coast – Burin Peninsula	55,800	11,234	1,453	2,803	1,166	634	221	248	3
02 Notre Dame – Central Bonavista Bay	138,100	11,231	1,620	3,050	1,305	698	251	235	3
03 West Coast – Northern Peninsula – Labrador	127,700	12,229	1,927	2,701	1,336	438	188	235	2
10 Prince Edward Island	127,300	13,138	2,043	2,774	959	739	299	200	3
20 Cape Breton	165,800	12,373	2,085	2,958	808	736	473	196	3
21 North Shore (Nova Scotia)	161,700	13,124	2,201	2,673	630	765	421	191	3
22 Annapolis Valley	114,200	14,058	2,458	2,351	492	667	371	195	3
23 Southern Nova Scotia	126,500	13,944	2,487	2,636	660	793	377	165	3
30 Chaleur Bay – Miramichi	181,200	12,542	2,105	3,151	1,261	635	277	208	3
31 Moncton	167,600	14,163	2,501	2,729	822	685	367	177	3
32 Saint John	166,500	14,615	2,636	2,436	499	680	391	185	3
34 Edmundston – Woodstock	83,700	12,296	1,933	2,583	700	625	323	215	3
40 Bas Saint-Laurent – Gaspésie	234,900	13,558	2,546	3,086	1,116	593	279	214	2
62 Southwestern Manitoba	110,000	15,883	2,200	2,586	257	836	407	214	3
66 Parkland	49,600	13,513	1,541	3,256	338	1,104	380	230	3
71 Swift Current – Moose Jaw	122,100	15,764	2,482	2,590	207	810	438	186	2
73 Yorkton – Melville	107,700	13,401	1,855	2,933	261	928	388	198	3
74 Prince Albert	206,500	14,119	2,116	2,763	345	688	314	233	2
75 Northern Saskatchewan	25,800	8,318	1,055	2,443	423	114	61	362	1
93 Okanagan	345,000	15,796	2,874	2,628	566	685	455	169	3
Low transfer neutral	660,500								
33 Fredericton	113,300	14,890	2,751	2,199	458	604	337	175	3
49 Nouveau Québec	37,000	12,151	2,802	1,450	389	92	82	351	1
60 Southeastern Manitoba	73,500	14,717	2,348	2,110	297	598	284	222	2
61 South Central Manitoba	50,300	13,697	1,771	2,258	218	779	311	226	2
63 North Central Manitoba	46,600	13,050	1,900	2,084	265	650	305	176	1
65 Interlake	71,000	13,287	2,154	2,141	310	620	322	169	1
67 Northern Manitoba	78,000	11,388	1,857	1,912	376	246	123	278	1
86 Peace River (Alberta)	134,800	14,356	2,472	1,938	409	278	146	240	1
98 Peace River (B.C.)	56,000	15,266	2,691	1,860	593	249	159	208	2

Table 2
Per capita direct taxes and government transfer payments by tax-transfer category, 1987 – Concluded

Subprovincial regions	Population*	Personal income	Modified direct taxes	All government transfers	Selected transfer components				No. above median
					U.I. benefits	EOAS	C/QPP benefits	Child benefits	
					\$				
High transfer neutral									
41 Saguenay – Lac Saint-Jean	288,600	14,581	3,157	2,358	727	389	298	229	2
42 Quebec	1,050,700	16,615	3,543	2,352	471	573	343	195	2
43 Trois-Rivières	437,300	15,394	3,114	2,528	526	633	368	202	4
44 Estrie	262,900	15,663	3,188	2,395	409	626	369	213	3
48 North Shore (Quebec)	103,300	15,185	3,441	2,362	856	272	206	221	2
70 Regina – Moose Mountain	277,200	17,988	3,370	2,411	241	631	365	183	2
80 Medicine Hat	68,700	17,139	3,150	2,348	340	595	369	184	2
91 Vancouver Island & Coast	543,900	17,284	3,353	2,570	481	719	494	155	3
94 Kootenay	128,300	15,586	2,936	2,403	529	614	411	177	3
Tax dominated									
24 Halifax	310,600	17,258	3,541	2,019	384	534	362	151	1
45 Montreal	3,734,600	18,459	4,169	2,273	392	580	381	171	1
46 Outaouais	294,900	16,135	3,663	2,209	510	436	325	195	2
47 Abitibi-Témiscamingue	148,400	15,833	3,576	2,280	620	406	297	234	2
50 Eastern Ontario	1,294,900	19,527	4,096	2,028	272	552	410	145	1
51 Central Ontario	5,859,600	21,091	4,559	1,850	225	502	373	140	1
52 Southwestern Ontario	1,307,500	18,832	3,699	2,135	274	611	433	162	2
53 Northeastern Ontario	568,900	16,672	3,351	2,210	424	490	427	178	1
54 Northwestern Ontario	239,800	17,558	3,581	2,075	410	475	392	178	1
64 Winnipeg	600,000	19,002	3,461	2,334	312	614	424	156	2
72 Saskatoon – Biggar	274,600	16,746	3,032	2,340	301	539	324	184	0
81 Lethbridge	150,400	16,261	2,895	2,305	281	560	346	219	2
82 Calgary – Drumheller	761,600	20,429	4,530	2,087	396	383	261	160	0
83 Banff – Jasper	49,300	16,714	3,517	2,078	445	344	241	176	0
84 Red Deer – Wainwright	176,500	15,939	2,968	2,240	334	512	286	203	1
85 Edmonton – Lloydminster	890,800	18,217	3,807	2,160	419	410	273	172	0
87 Athabasca	148,300	15,410	3,087	2,024	466	332	164	214	2
92 Lower Mainland – Southwest	1,602,800	18,912	3,877	2,286	470	586	381	142	2
95 Cariboo	148,300	15,924	3,287	1,887	591	239	190	204	2
96 North Coast	62,800	15,299	3,250	1,782	660	181	156	200	2
97 Nechako	38,700	15,362	3,054	1,747	508	236	161	227	2
Median for 60 SPRs					452	594	325	197	

Source: Small Area Income Estimates, Labour and Household Surveys Analysis Division
* Rounded to nearest 100. Per capita amounts are calculated using unrounded population data.

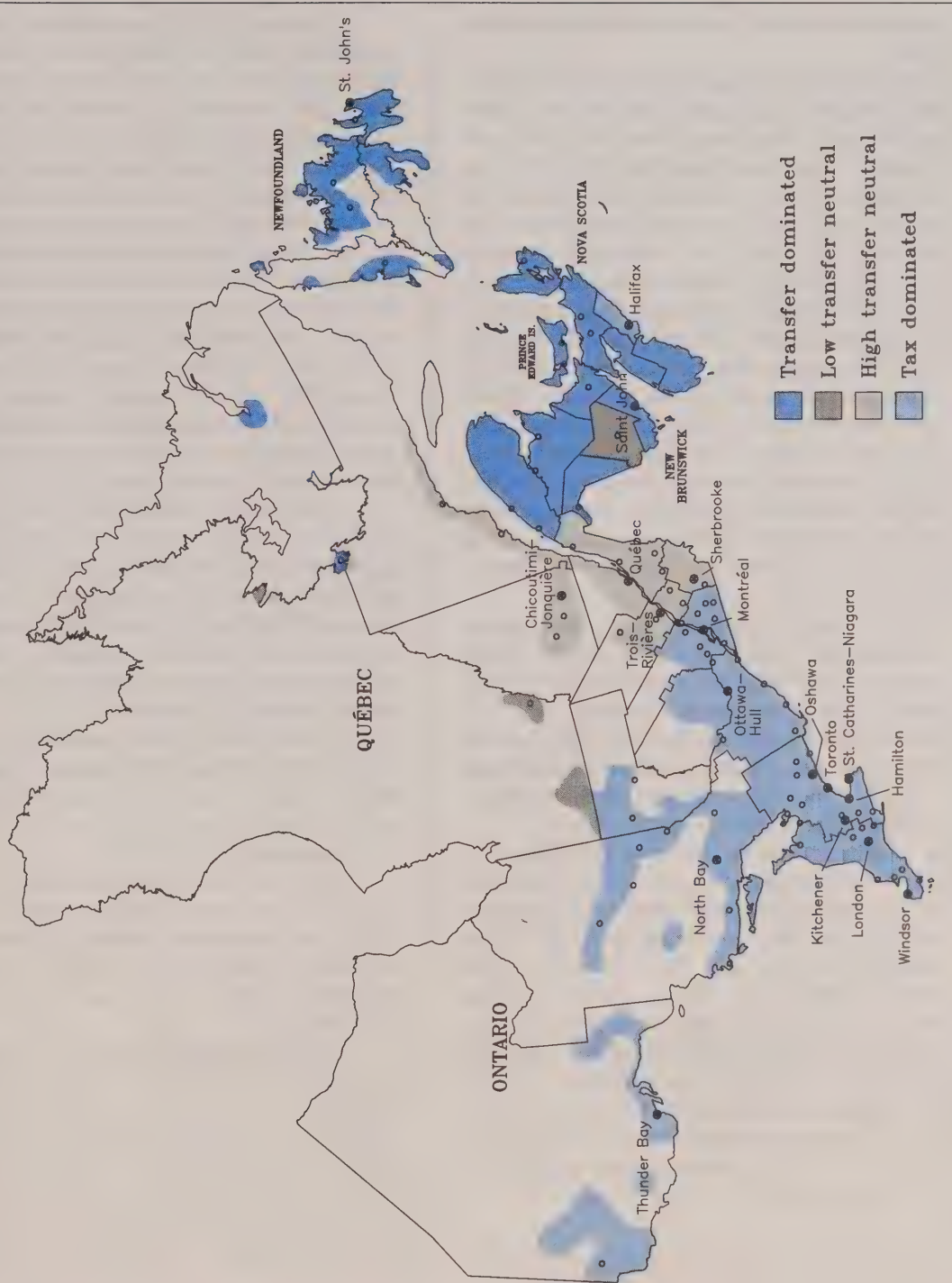
Tax Transfer Classifications, 1987 Western Canada



PRODUCED FOR THE LABOUR AND HOUSEHOLD SURVEYS ANALYSIS DIVISION
BY THE GEOGRAPHY DIVISION, STATISTICS CANADA, 1990.

SOURCE: LABOUR AND HOUSEHOLD SURVEYS ANALYSIS DIVISION, 1987

Tax Transfer Classifications, 1987 Eastern Canada



SOURCE: LABOUR AND HOUSEHOLD SURVEYS ANALYSIS DIVISION, 1987

PRODUCED FOR THE LABOUR AND HOUSEHOLD SURVEYS ANALYSIS DIVISION
BY THE GEOGRAPHY DIVISION, STATISTICS CANADA, 1990.

Subprovincial regions in the tax-transfer array

Using median per capita government transfers (\$2,344) and modified direct taxes (\$2,884) as reference points, 21 SPRs are transfer dominated and 21 SPRs are tax dominated. The remaining 18 are tax-transfer neutral, and are evenly divided between SPRs with low taxes and transfers and those with high taxes and transfers.

Tax dominated regions are concentrated in two areas, Central Canada and the west. There are also two isolated SPRs in this category: Halifax, the only tax dominated region in the Atlantic Provinces; and Winnipeg, the lone Manitoba representative. The 21 tax dominated regions account for 73% of Canada's population. They provide 80% of modified direct taxes and receive 69% of total government transfer payments (Table 2).

A high degree of urbanization characterizes these well-off areas. They contain 17 of the 25 census metropolitan areas (CMAs) and about one-half of the 113 census agglomerations (CAs).⁵ Only two of these SPRs are without a major urban centre – Banff-Jasper in Alberta and Nechako in northern British Columbia.

The transfer dominated SPRs are clustered almost exclusively in the east and the mid-west. Many are sparsely populated, and together they comprise only 12% of the Canadian population. Two of these SPRs contain CMAs: St. John's in the Avalon Peninsula (SPR 00), and Saint John in New Brunswick (SPR 32). These SPRs also hold 25 CAs, but 5 have neither CMAs nor CAs. The transfer dominated SPRs generate only 7% of Canada's modified direct taxes but claim 15% of the government transfers for their inhabitants.

Neutral SPRs are situated in New Brunswick, Quebec and the west. While the high-low and low-high configurations of taxes and transfers appear to reflect stable situations, the high-high and low-low relationships of taxes and transfers in the neutral areas appear inherently unstable. One of the classifying characteristics could easily shift to the opposite side because it is close to the median, thereby creating a tax dominated or transfer dominated region. The impact could occur on the tax or transfer side of the relationship. Given this apparent instability, these neutral areas exhibit characteristics that resemble not only those of tax dominated regions but also those of transfer dominated regions.

The neutral SPRs with a low tax-transfer level comprise 2.6% of the population; they raise only 1.6% of Canada's taxes but claim 2.4% of transfers to persons. Neutral SPRs with a high tax-transfer mix account for 12.4% of the population and raise a larger share of tax revenues (11.1%), but receive 13.6% of transfers.

There are no CMAs and only nine CAs in the low neutral SPR group. Two of the SPRs, south central Manitoba and southeastern Manitoba, have no major urban centre (CA or CMA).

Six CMAs and twenty-two CAs are found in high neutral SPRs. Three of these CMAs are provincial capitals: Quebec (SPR 42), Regina (SPR 70), and Victoria (SPR 91). All SPRs in this group have at least one CMA or CA.

Being neutral does not imply that taxes and transfers are completely balanced, but only that they are on the same side of the median. In low neutral areas, three of the SPRs have transfers higher than taxes, while in the other six regions and in all of the high neutral areas, transfers lag taxes by varying amounts.

Transfer composition

As mentioned earlier, the proportions of transfer components vary greatly by SPR. The question arises whether the level of transfer payments is dominated by one or two contributing components, or results from all transfer components contributing to the prevailing level of transfer payments.

Many more transfer components are above the respective component median⁶ in transfer dominated regions than in tax dominated areas (Table 3). Canada and Quebec Pension Plan benefits (C/QPP) were the same in both groups, suggesting that this element is not an indicator of need; rather, it reflects past earning levels of the retired population. Of the 11 tax dominated SPRs that were high in C/QPP benefits, only 2 were high in Extended Old Age Security receipts. In contrast all the transfer dominated SPRs with high C/QPP components were also high in Extended Old Age Security. This component, by virtue of its Guaranteed Income Supplement and Spouse's Allowance content, is usually associated with low income characteristics.

Conclusion

Although regional disparities have a strong subprovincial dimension, in many cases they cut across provincial boundaries. Almost all subprovincial regions in the four Atlantic provinces are transfer dependent, although Nova Scotia contains a tax dominated pocket and New Brunswick contains a low neutral area.

Quebec best exemplifies the degree of subprovincial diversity. It contains SPRs in all four tax-transfer categories, although high neutral areas predominate this province.

Ontario, on the other hand, is exclusively tax dominated. Tax and transfer levels are not sufficiently different in this province to create SPRs with distinguishing attributes.

Manitoba and Saskatchewan share a contiguous strip of transfer dominated SPRs. Yet neutral and tax dominated areas are found in both of these provinces.

Alberta consists largely of tax dominated areas, but neutral SPRs of both types (high and low) cover the northern and southeastern fringe.

British Columbia also contains one or more SPRs of each category. The tax dominated, heavily populated Lower Mainland contributes largely to the well-to-

Table 3
Number of SPRs with values greater than the median – Canada, 1987

	Transfer dominated	Neutral		Tax dominated
		Low	High	
SPRs in group	21	9	9	21
Components above median				
Unemployment Insurance	15	2	6	7
Extended Old Age Security	17	5	6	2
Canada/Quebec Pension Plan	11	1	7	11
Child benefits	13	6	4	7

do status of this province. The high tax and accompanying high transfer levels of the Kootenay and Vancouver Island SPRs also contribute to making British Columbia one of the advantaged areas.

Although the tax dominated and the transfer dominated areas are likely to attract most readers' attention, the potential for change of the neutral areas makes them appealing subjects. Consider the heartland of Quebec, which stretches from Sept-Îles to Sherbrooke, or parts of Saskatchewan around Regina, or Vancouver Island with the provincial capital of British Columbia. All of these areas have tax-transfer configurations that are in balance within the narrowly defined limits of this analysis, albeit at a high per capita level. A sudden drop in tax yields resulting from some adverse economic event could move these areas into the transfer dominated group. Conversely, a reduction in transfer payments may result in these areas being categorized as tax dominated.

Neutral areas with low transfers and low taxes are less conspicuous. In Manitoba, the economies of these subprovincial regions are highly dependent on the farm sector. With farmers, who as a rule do not qualify for Unemployment Insurance benefits, this particular transfer component is relatively low. Given the overall weight of Unemployment Insurance benefits in the transfer array, total transfers remain low even if taxes are low as a result of depressed income levels. In fact, these regions are disguised transfer dependent regions that fail to fall into the dependent category because many people in these areas do not qualify for Unemployment Insurance benefits.

Thus, the areas that are neutral in their tax-transfer interaction may be worth watching in the future. These areas are more likely to change their tax-transfer status than areas that are dominated by either taxes or transfers. □

Technical notes

To quantify regional disparities, the *coefficient of variation* (CV) was used. It is a measure of variability, where each of n regions in a regional array contributes one observation (Y_i), and where the average (\bar{Y}) of n regional observations is used to standardize this measure. The resulting formula can be written as

$$CV = \frac{[\sum(Y_i - \bar{Y})^2 / (n-1)]^{1/2}}{\bar{Y}}$$

To understand this concept in non-statistical terms, suppose all regions have an identical per capita income, say \$10,000. Then the average for all regions is also \$10,000, and the difference of $Y_i - \bar{Y}$ is always "zero". Consequently, the numerator goes to zero and CV goes to zero; therefore, if all per capita income levels are the same, which means that there are no disparities (income differences) between regions, the quantitative indicator goes to zero.

Let us now assume that the average over all regions is still \$10,000, but the per capita income for each region lies between \$5,000 and \$15,000; consequently, the differences ($Y_i - \bar{Y}$) can be as large as \$5,000 (positive or negative), and the value ($Y_i - \bar{Y}$)² will always be positive. Hence, the sum of all squared values will be positive, yielding a square root of which only the positive value will be used. Dividing this square root by the average value for all regions will leave a positive value. The further this value departs from zero, the greater the inequality (or disparity) between regions.

The coefficients of variation for taxes and transfers are as follows:

CVs by tax-transfer classifications, 1987

	Personal income	Direct taxes	Govern- ment transfers
	%		
All subprovincial regions	16.1	27.8	15.6
Transfer dominated regions	13.1	21.0	9.0
Low neutral regions	9.6	17.5	12.3
High neutral regions	7.1	5.8	3.3
Tax dominated regions	9.9	13.4	8.5

Notes

¹ For a number of years Statistics Canada has published *Income Estimates for Subprovincial Areas*. The analysis in this article uses 1987 data from this publication, as well as some unpublished components of government transfer payments.

² "Indirect taxes" are excluded from the analysis. Indirect taxes include customs duties, property taxes, retail sales taxes, and gasoline and tobacco taxes.

³ This relationship has been verified by calculating the degree of correlation between these two variables (0.9 for personal income and market income as correlated with "modified direct taxes" for the 10 provinces as well as for the 60 SPRs).

⁴ Using per capita taxes and per capita transfers, one finds a negative correlation of -0.9 for the provinces and -0.5 for the SPRs, which supports the intuitive reasoning.

⁵ Census metropolitan areas are the main labour market areas of urbanized cores containing a population of 100,000 or more. Census agglomerations are urban centres containing a population between 10,000 and 100,000.

⁶ The medians in this case are the component medians given at the bottom of Table 2.

References

Cameron, D.M. "Regional Economic Disparities: The Challenge to Federalism and Public Policy." *Canadian Public Policy*, Vol. VII, No. 4, Guelph, Autumn 1981, pp. 500-505.

Courchesne, T.J. *Economic Management and the Division of Powers*. Toronto: University of Toronto Press, 1986.

---. "Regional Economic Disparities: A Market Perspective on Regional Disparities." *Canadian Public Policy*, Vol. VII, No. 4, Guelph, Autumn 1981, pp. 506-518.

Economic Council of Canada. *Living Together: A Study of Regional Disparities*. Ottawa, 1977.

Matthews, R. "Two Alternative Explanations of the Problem of Regional Dependency in Canada." *Canadian Public Policy*, Vol. VII, No. 2, Guelph, Spring 1981, pp. 268-283.

Norrie, K. *Disparities and Interregional Adjustments*. Toronto: University of Toronto Press, 1986.

Norrie, K.H., M.B. Percy and L.S. Wilson. "Financing Confederation: Principles and Practices of Equalization." *Canadian Public Policy*, Vol. VIII, No. 3, Guelph, Summer 1982, pp. 290-293.

Royal Commission on the Economic Union and Development Prospects of Canada. *Report*, Vol. III. Ottawa: Minister of Supply and Services, 1985.

Savoie, D.J. *Regional Economic Development: Canada's Search for Solutions*. Toronto: University of Toronto Press, 1986.

Statistics Canada. *Income Estimates for Subprovincial Areas, 1987*. Annual, Catalogue 13-216. Ottawa, October 1989.

---. *National Income and Expenditure Accounts*, Occasional, Catalogue 13-549E. Ottawa, September 1975.

Whalley, J. and I. Trela. *Regional Aspects of Confederation*. Toronto: University of Toronto Press, 1986.

Labour force participation: An international comparison

Raj K. Chawla

Since the mid-1960s, the Canadian labour market has undergone a number of structural changes. Two key changes have been the increased participation of women and the growth in employment in the service sector. Other industrialized nations have also experienced these changes to varying degrees. This article highlights changes that have occurred in Canada and six other major industrialized countries – the United States, the United Kingdom, France, West Germany, Italy and Japan – known as the G-7 group. It uses data from the Organisation for Economic Co-operation and Development.

No attempt is made in this study to isolate the effect of any of the economic and social changes that have taken place in the G-7 group's labour markets. These changes include alterations in business cycles, demographic shifts, and migration (especially in the post-World War II era). One should also bear in mind that the governments of these countries have made significant alterations to their laws governing (1) conditions of employment, (2) financial compensation to unemployed persons, and (3) the availability of public and work-related pension plans (including early-retirement provisions).

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Participation rates of men and women

During the 22-year period between 1965 and 1987, Canada experienced the largest increase in the labour force participation rate for women in all seven countries – 20 percentage points, compared with 16 for the United States, 9 for the United Kingdom, 7 for France, and only 5 for Italy (Table 1). During this same period, the labour force participation for women in West Germany did not show any change, while the rate for Japanese women actually dropped 2 percentage points.

Although men constituted the majority of the labour force in each country of the G-7 group, their participation rate has fallen. For example, the rate dropped by 12 percentage points each in both West Germany and Italy, by about 10 points in the United Kingdom and France, and by about 2 points in Canada and the United States. The larger drop in the participation rate for European men relative to North American men may be attributed to several factors pertinent to the European labour market – their older age profile, structural changes in economies affecting employment opportunities, early retirement induced by work-related pension plans, and so on. (Chawla, 1990). Some of the differences in estimates of labour force participation may also be attributable to differences in the collection, editing and processing of labour force data in the European countries.¹

Table 1

Relative shares of changes in employment to changes in labour force participation for men and women in seven major OECD countries, 1965 and 1987

Country	Labour force participation rate*		Employment/population ratio**		Percentage point change in the		
	1965	1987	1965	1987	Participation rate	Employment/population ratio	Unemployment/population ratio
%							
Men							
Canada†	77.0	75.3	74.5	68.9	-1.7	-5.6	3.9
United States	73.7	71.8	70.8	67.4	-1.9	-3.4	1.5
United Kingdom	82.7	73.1	81.6	64.0	-9.6	-17.6	8.0
France††	72.2	62.8	71.1	57.4	-9.4	-13.7	4.3
West Germany	79.6	67.2	79.1	54.2	-12.4	-24.9	12.5
Italy	77.1	64.6	73.7	59.2	-12.5	-14.5	2.0
Japan	81.8	77.4	80.9	75.2	-4.4	-5.7	1.3
Women							
Canada†	34.8	55.1	33.6	49.9	20.3	16.3	4.0
United States	37.6	54.0	35.6	50.7	16.4	15.1	1.3
United Kingdom	39.7	48.6	39.4	45.0	8.9	5.6	3.3
France††	37.9	44.5	36.4	38.4	6.6	2.0	4.6
West Germany	40.4	40.3	40.2	36.6	-0.1	-3.6	3.5
Italy	29.9	35.3	27.5	28.7	5.4	1.2	4.2
Japan	50.7	48.6	50.0	47.3	-2.1	-2.7	0.6
Total							
Canada†	55.8	64.9	54.0	59.2	9.1	5.2	3.9
United States	55.1	62.6	52.6	58.7	7.5	6.1	1.4
United Kingdom	60.2	60.4	59.5	54.1	0.2	-5.4	5.6
France††	54.4	53.3	53.1	47.5	-1.1	-5.6	4.5
West Germany	58.5	53.0	58.2	48.8	-5.5	-9.4	3.9
Italy	52.5	49.4	49.7	43.4	-3.1	-6.3	3.2
Japan	65.8	62.6	65.0	60.8	-3.2	-4.2	1.0

Source: Labour Force Statistics, OECD, Paris

* Ratio of number of persons (15+) in the labour force to the population (15+).

** Ratio of number of persons (15+) employed to the population (15+).

† Data are shown for 1966 and 1987.

†† Data are shown for 1969 and 1987.

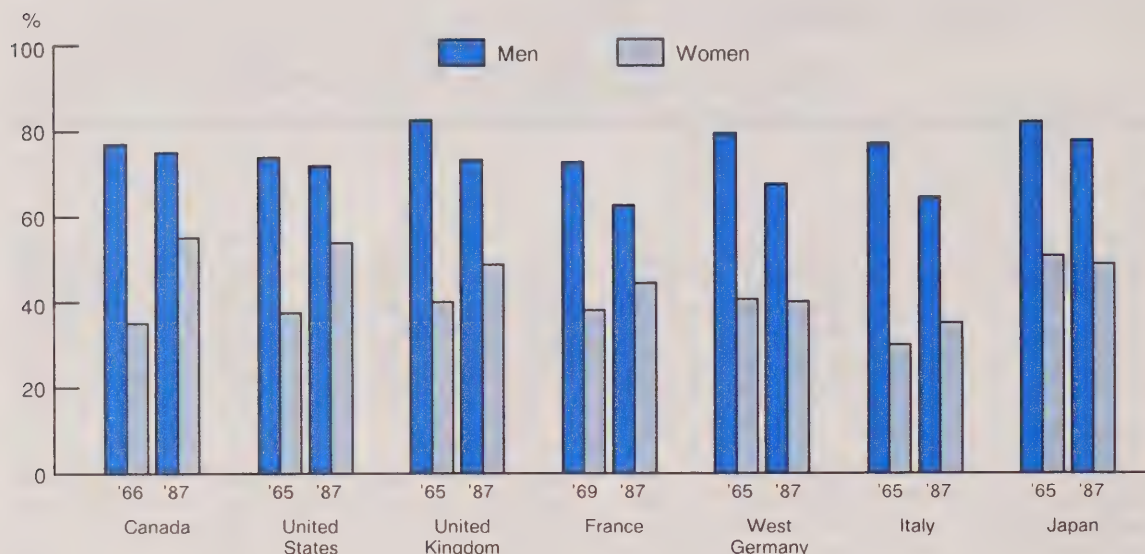
In all seven countries, the gap between the labour force participation rates of men and women narrowed considerably between the mid-60s and the late '80s. By 1987, Canada led the group with a 22 percentage point reduction compared with a reduction of 18 percentage points for the United States and only 2 percentage points for Japan.

Decomposition of changes

The participation rate shows the proportion of the population active in the labour force, that is, those persons either employed or unemployed. An increase in either employment or unemployment will increase the participation rate.² In Canada, four-fifths of the 20-point upsurge came from an increase in the employment/population ratio, while in

Participation rates for men and women

The gap in participation rates of men and women has narrowed in all seven countries.



Source: *Labour Force Statistics, OECD, Paris*

the United States, more than nine-tenths of the rise was derived from an increase in the employment ratio (Table 1). During the 1965-87 period, the employment opportunities for North American women expanded substantially more than those for women in the other five countries.

During the mid-60s, men in the G-7 countries accounted for 60% to 70% of their respective country's overall participation rate. Two decades later, their relative representation had fallen to between 55% and 63% (Table 2). For instance, Canada had the largest change in the overall labour force participation rate – 9.1 percentage points – resulting from a 10.7 percentage point increase for women, and a 1.6 percentage point drop for men. The United States ranked second in terms of the change in the overall participation rate (7.5 percentage points), while West Germany ranked at the

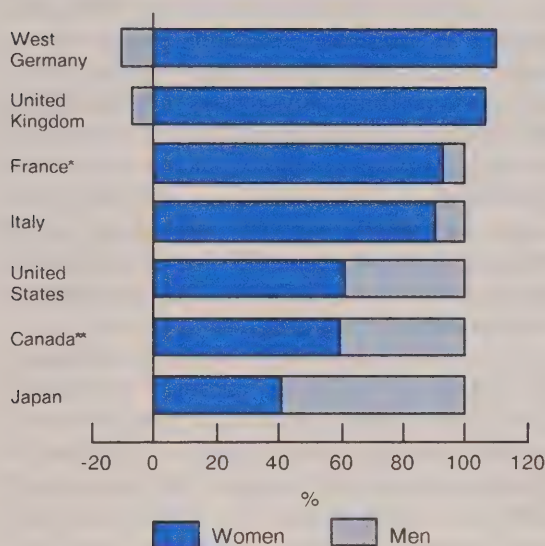
bottom, with a decline of 5.5 percentage points.

In most of the G-7 countries, the men's participation rate fell in the last two decades, whereas the women's rate rose (except for West Germany and Japan). In fact, the increase between 1965 and 1987 in the overall labour force participation rate for these countries was entirely attributable to the growth in women's participation in the labour force.

The decline in the men's labour force participation was largely due to the drop in their employment/population ratio. (At the same time, their unemployment/population ratios³ increased only slightly.) The shifts in such ratios were more pronounced in the four European countries than they were in Canada or the United States, the largest drop in the employment/population ratio being for men in West Germany.

Women as a proportion of the overall increase in the labour force, 1965-1987

Except in Japan, women accounted for most of the increase in the number of labour force participants.



Source: Labour Force Statistics, OECD, Paris

* For 1969 and 1987

** For 1966 and 1987

The drop in the employment/population ratio for the European men may have been due to the higher proportion of older men, disability or early retirement, or structural changes in the post-war era. The European working population can also easily move between many countries because provisions of the European Economic Community permit liberal employment mobility between member countries. The ratios for the four European countries should therefore be interpreted with some caution.

Changes in employment status

During the past two decades, the majority of employed persons in industrialized countries have been paid workers, that is, persons who work for someone else for a wage or salary. In the mid-60s, the proportion of paid workers ranged from 93.2% for the British to 60.8% for the Japanese. By the late '80s, their numbers had increased considerably – the proportion ranged from 91.1% for Americans to 70.2% for Italians.

Table 2
Relative labour force shares by sex in seven major OECD countries, 1965 and 1987

Country	1965				1987				Change in overall participation rate		
	Overall participation rate	Relative contribution			Overall participation rate	Relative contribution			Men	Women	Total
		Men	Women	Total		Men	Women	Total			
					%					percentage points	
Canada*	55.8	68.6	31.4	100.0	64.9	56.5	43.5	100.0	-1.6	10.7	9.1
United States	55.1	64.8	35.2	100.0	62.6	55.3	44.7	100.0	-1.1	8.6	7.5
United Kingdom	60.2	65.4	34.6	100.0	60.4	58.3	41.7	100.0	-4.2	4.4	0.2
France†	54.4	63.8	36.2	100.0	53.3	56.7	43.3	100.0	-4.5	3.4	-1.1
West Germany	58.5	62.9	37.1	100.0	53.0	60.0	40.0	100.0	-5.0	-0.5	-5.5
Italy	52.5	70.5	29.5	100.0	49.4	63.0	37.0	100.0	-5.9	2.8	-3.1
Japan	65.8	60.2	39.8	100.0	62.6	60.1	39.9	100.0	-2.0	-1.2	-3.2

Source: Labour Force Statistics, OECD, Paris

* Data are shown for 1966 and 1987.

† Data are shown for 1969 and 1987.

During the last two decades, the variation in the proportion of persons employed as paid workers in these industrialized countries has narrowed from 32 to 21 percentage points. This is largely due to the change in the employment status of women in France, West Germany, Italy, and Japan. Women employed as unpaid family workers in these countries in the mid-60s have been replaced by an increasing number of women employed as paid workers by the late '80s. Younger and more educated women have been more likely to take paid jobs rather than help in family businesses or farm operations.

For Canada, the United States and the United Kingdom, however, the proportions of employed women working as paid workers did not show much variation. But the situation was different for the men in these three countries: their proportions rose by 3 to 4 percentage points in Canada and the United States, but fell by 8 percentage points in the United Kingdom (Table 3).

Changes in women's representation

In terms of women's representation in the labour force, Japan (39.8%) ranked first in the mid-60s, but the United States (44.8%) led the group by the late '80s. Canada also moved up from sixth to second place over the same period. During the last two decades, Canada's progress in terms of women's representation in the labour force has been far greater than any other industrialized country except the United States. In terms of the magnitude of change in such proportions, Canada also led the other six industrialized countries, showing a 12 percentage point change, followed closely by the United States, with 10 percentage points. Japan ranked last, with almost no change.

As more and more women have joined the labour force, their representation has also grown among employed paid workers and the unemployed. For instance, women in Canada accounted for nearly 33% of all paid workers in 1966 compared with 44% in 1987; the corresponding proportions for the

Table 3

Paid workers as percentage of all employed persons by sex in seven major OECD countries, 1965 and 1987

Country	Men		Women		Total	
	1965	1987	1965	1987	1965	1987
	%					
Canada*	85.4	88.0	90.3	91.8	87.0	90.1
United States	84.6	89.2	89.8	93.4	86.4	91.1
United Kingdom	91.7	83.6	95.8	92.2	93.2	87.3
France†	77.9	82.1	76.2	87.4	77.3	84.3
West Germany	83.9	86.9	75.0	87.7	80.6	87.2
Italy	63.9	68.3	59.1	73.9	62.5	70.2
Japan	68.8	79.2	48.6	68.4	60.8	74.9

Source: *Labour Force Statistics, OECD, Paris*

* Data are shown for 1966 and 1987.

† Data are shown for 1969 and 1987.

United States were 36% and 46%. Therefore, in terms of the change over the last two decades in women's representation among paid workers, Canada ranked first with about 12 percentage points, followed by the United States with 10 points. Japan was last, with 5 points.

Women's representation among the unemployed was the highest in Italy, followed by France and West Germany. For example, in 1987 women accounted for 57% of all the unemployed in Italy, compared with 46% in Canada and 45% in the United States. However, in terms of the magnitude of change over the last two decades, West Germany ranked first, with an 18 percentage point change, followed by Canada, with a 14 percentage point change (Table 4).

In 1987, for France, West Germany, and Italy, women's representation among the unemployed was much higher than their representation in the total labour force. This

indicates that women, relative to men, were carrying a greater share of unemployment. For Canada, however, women's representation among the unemployed was no different than their representation in the total labour force.

Except for West Germany and the United Kingdom, which over the last two decades showed drops in the number of men in the labour force, each of the G-7 countries demonstrated increases in the number of men and women in the labour force. For instance, for both Canada and the United States, the sex-mix of the new labour force participants between 1965 and 1987 comprised 60% women and 40% men, whereas the reverse held for Japan.

Changes in employment by industry

Between 1965 and 1987, in all seven countries, the proportion of persons employed in primary industries such as agriculture and mining, and secondary industries such

Table 4
Women's representation in selected labour force groups in seven major OECD countries, 1965 and 1987

Country	Paid workers*		Unemployed		Labour force**	
	1965	1987	1965	1987	1965	1987
	%					
Canada†	32.5	44.0	31.5	45.7	31.3	43.4
United States	36.2	45.9	43.1	44.8	35.2	44.8
United Kingdom	35.6	45.5	23.5	30.4	34.5	41.8
France††	35.2	43.5	59.3	54.7	36.2	43.4
West Germany	34.5	39.7	27.9	45.8	37.1	40.0
Italy	27.2	36.1	43.2	56.6	29.6	37.0
Japan	31.7	36.5	43.9	39.9	39.8	39.9

Source: Labour Force Statistics, OECD, Paris

* Paid workers include mostly wage and salary earners.

** Includes paid workers, self-employed, unemployed and unpaid family workers.

† Data are shown for 1966 and 1987.

†† Data are shown for 1969 and 1987.

Table 5

Percentage distribution of employed persons by industry group¹ and sex in seven major OECD countries, 1965 and 1987

Country	1965				1987			
	Agriculture, forestry, etc. ²	Manufacturing, construction, etc. ³	All other industries ⁴	Total	Agriculture, forestry, etc. ²	Manufacturing, construction, etc. ³	All other industries ⁴	Total
%								
Men								
Canada*	11.1	40.6	48.3	100.0	6.4	34.4	59.2	100.0
United States	7.9	43.0	49.1	100.0	4.3	36.3	59.3	100.0
United Kingdom	4.9	53.7	41.5	100.0	3.3	39.7	56.9	100.0
France**	..	..	..	..	..	..	..	..
West Germany	7.9	58.0	34.0	100.0	4.4	50.1	45.4	100.0
Italy	25.1	40.1	34.8	100.0	10.5	37.8	51.7	100.0
Japan	18.9	37.2	43.8	100.0	7.2	38.1	54.6	100.0
Women								
Canada*	4.2	18.4	77.3	100.0	2.9	13.4	83.8	100.0
United States	3.3	21.4	75.3	100.0	1.4	15.7	82.9	100.0
United Kingdom	1.9	33.2	65.0	100.0	1.1	16.8	82.2	100.0
France**	..	..	..	..	..	..	..	..
West Germany	15.9	34.4	49.7	100.0	6.2	25.8	68.0	100.0
Italy	29.2	29.1	41.7	100.0	10.7	22.7	66.6	100.0
Japan	30.5	25.1	44.4	100.0	9.9	27.2	62.9	100.0
Total								
Canada*	8.9	33.7	57.4	100.0	4.9	25.3	69.8	100.0
United States	6.3	35.5	58.2	100.0	3.0	27.1	69.9	100.0
United Kingdom	3.8	46.6	49.6	100.0	2.4	29.8	67.8	100.0
France**	14.5	39.0	46.5	100.0	7.1	30.8	62.1	100.0
West Germany	10.9	49.3	39.8	100.0	5.2	40.5	54.3	100.0
Italy	26.3	37.0	36.8	100.0	10.5	32.6	56.8	100.0
Japan	23.5	32.4	44.1	100.0	8.3	33.8	57.9	100.0
Women as proportion of total employed								
Canada*	14.9	17.1	42.2	31.3	25.4	22.8	51.8	43.2
United States	18.4	21.0	45.0	34.8	20.7	26.0	53.1	44.8
United Kingdom	16.7	24.7	45.4	34.6	19.5	24.2	52.2	43.1
France**	..	..	..	..	..	..	..	..
West Germany	54.1	25.9	46.3	37.1	47.7	25.1	49.4	39.5
Italy	32.1	22.7	32.6	28.8	34.9	23.9	40.2	34.3
Japan	51.5	30.7	40.0	39.7	47.6	32.2	43.3	39.9

Source: Labour Force Statistics, OECD, Paris

¹ Based on International Standard Industrial Codes (ISIC).

² Includes hunting and fishing.

³ Includes mining and quarrying, electricity, gas and water.

⁴ Contains wholesale and retail trade, restaurants and hotels, transport, storage and communications, finance, insurance and real estate, business, community, social and personal services and activity not adequately defined.

* Data are compared for 1966 and 1987.

** Data are shown for 1969 to 1987, and are not available by sex.

as manufacturing and construction, declined, while the proportion employed in the tertiary industries (that is, mostly service and related) increased (Table 5). In Canada and the United States, for example, the secondary industry group accounted for one-third of all employment in the mid-60s compared with about one-quarter in the late '80s.

The proportions of men and women employed in the tertiary industry group have grown over the last two decades in each of the seven countries. In fact, the magnitudes of changes were more significant for European countries than for either Canada or the United States.

However, based on the overall proportion of persons employed in the tertiary industries, the United States ranked first, followed by Canada, the United Kingdom, France, and Japan. The ranking remained unchanged for the reference years considered. For instance, in both the United States and Canada, about 58% of all employed persons were in the tertiary industries in the mid-60s compared with 70% by the late '80s; for West Germany and Italy, the corresponding proportions were about 40% in the '60s and 55% in the 80s.

Women's representation among the employed in the tertiary industries in Canada, the United States and the United Kingdom rose from a little over 40% in the mid-60s to more than half by the late '80s. In contrast, even in the late '80s, both Italy and Japan had more men than women employed in their respective tertiary industry groups.

Although women have made some progress in the male-dominated primary and secondary industries in almost all of the seven countries (Table 4), most of the growth in the number of women employed has been due to the growth in industries, such as services, retail and wholesale trade, and finance, insurance and real estate.

Summary

Between the mid-60s and the late '80s, the gap between the labour force participation rates of men and women narrowed in all seven major industrialized countries in the Western world, with Canada ranking on top. As well, each G-7 country experienced phenomenal growth in employment in the service and related industries. Women accounted for most of the growth in the labour force of these countries. □

Notes

¹ For a discussion of the problems involved in comparing international data on labour force statistics, see, for example, C. Sorrentino, *Monthly Labor Review* (1981 and 1983); J. Moy, *Monthly Labor Review* (1988); P.J. McMahon, *Monthly Labor Review* (1986); and Organisation for Economic Co-operation and Development, *the OECD Employment Outlook* (1987).

² The participation rate is the sum of the employment/population ratio and the unemployment/population ratio, that is $LF/P = E/P + U/P$. However, if one wanted to decompose the U/P ratio, one could equally have written $U/P = LF/P - E/P$. (The participa-

tion rates in this study were also standardized by age and sex using labour force data by age and sex as published by the International Labour Office. Although this exercise did not produce any meaningful results they are available upon request.)

³ In this paper, the unemployment/population ratio was used simply to complete the identity. However, one can also compare the unemployment rates by simply deriving them first. This is done by dividing the unemployment/population ratio by the participation rate.

References

Chawla, R.K. "Dependency Ratios: An International Comparison." *Perspectives on Labour and Income*, Quarterly, Catalogue 75-001E, Summer 1990. Ottawa: Statistics Canada, pp. 50-57.

McMahon, P.J. "An International Comparison of Labor Force Participation." *Monthly Labor Review*, Vol. 109, No. 5, Washington, D.C., May 1986, pp. 3-12.

Moy, J. "An Analysis of Unemployment and Other Labor Market Indicators in 10 Countries." *Monthly Labor Review*, Vol. 111, No. 4, Washington, D.C., April 1988, pp. 39-50.

Organisation for Economic Co-operation and Development. *The OECD Employment Outlook*, Paris, September 1987, pp. 125-141.

Sorrentino, C. "Youth Unemployment: An International Perspective." *Monthly Labor Review*, Vol. 104, No. 7, Washington, D.C., July 1981, pp. 3-15.

---. "International Comparisons of Labor Force Participation, 1960-81." *Monthly Labor Review*, Vol. 106, No. 2, Washington, D.C., February 1983, pp. 23-36.

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National survey follows apprentices into the labour market

Results of the recent National Apprenticeship Survey are now available to interested users. The survey details the labour market experiences of registered apprentices who completed or dropped out of an apprenticeship program in 1986 or 1987. More specifically, it provides data on those who completed and those who discontinued the program, examining whether the general labour market experiences of the two groups differ, and to what extent they remain attached to the trade to which they were apprenticed. Employment and Immigration Canada (EIC) sponsored the survey to improve projections of marketplace demand for workers trained in various occupations.

Respondents were selected from administrative files, many kept by the provinces that administer the apprenticeship programs and some by EIC. Unfortunately, files from Quebec were not available, therefore the results exclude apprentices trained in that province. Respondents were chosen from two reference

years (1986 and 1987) partly to attempt to stabilize the effect of wide year-to-year fluctuations in registrants generally observed in the programs, and also to provide a population large enough for sample selection.

In telephone interviews lasting about 20 minutes, each respondent was queried about current occupation, whether it matched the trade trained for, and general labour market experiences in the two to three years since leaving the training program (with or without acquiring the qualifications).

Some of the main findings are (results exclude Quebec, but include both completers and discontinuers):

- two-thirds of apprentices were between 25 and 34 years old, half had completed high school while another 15% had some postsecondary qualifications, and 12% were women;
- about one-third were actually working in the trade at the time of enrolment; reasons for enrolling ranged from interest in the trade (68%) to wanting to make good money (17%);
- the top two trades for men were motor vehicle mechanics (17% of apprentices) and electricians/construction electricians (10%); women were heavily concentrated in traditional occupations, with over three-quarters training as barbers, hairdressers or beauticians;

- of the 50,000 people who left their apprenticeship program during the reference years, only 60% had completed the program;
- before starting the apprenticeship program, 78% of all respondents had jobs; in the year after leaving their programs, 96% of completers worked in the trade, and 52% of discontinuers also worked in the trade for which they had begun training.

Public use microdata files are available from Special Surveys Group. On request, special tabulations can also be provided at cost. Please contact Phil Stevens at (613) 951-9481 for further information. □

LMAS starts new year with new survey and new reports

In January 1991, the Labour Market Activity Survey (LMAS) will be conducted in 40,000 households across Canada. (For a description of the LMAS program, please see *Perspectives* Spring 1990.) Almost 60,000 adults will be interviewed about their labour force experience in 1990. This marks the third time that the same people have participated in the LMAS – they were interviewed in 1989 and 1990 – and continues the process of building a longitudinal data base on the working life of Canadians.

Users interested in results of those earlier surveys have a choice of electronic or paper formats. A series of three public use microdata files is now available, comprising the 1988 annual data file, the 1989 annual data file, and the 1988-89 longitudinal data file. And four recently released publications on men, women, youth and older workers present the results of the 1988 LMAS, out-

lining the labour market experiences of these four groups in 1987 (the survey reference year). Special tabulations can be produced and are available at cost.

For further information, contact Richard Veevers at (613) 951-4617. □

The coming squeeze on the supply of labour

A new report in the LMAS Analytical Studies series, *Is it retirement or unemployment?*, examines some of the reasons why the labour force participation of older workers is diminishing. Observing that participation rates among men aged 45 to 64 dropped from 88.5% in 1973 to 80.7% in 1986, the study asks how important job availability has been in influencing older workers' decisions to move into or out of the labour market.

Author Lars Osberg of Dalhousie University argues that the impact of the smaller youth population means that withdrawal of older experienced workers from the labour supply will have a considerable effect on the potential size and cost of the labour available to the economy.

Conventional wisdom holds that it is more common for the 45-64 age group to lose work than to retire from it; although those aged 55 to 64 often state that they retired from the labour force, the decision to retire often follows job loss. Many lay-offs result in withdrawal from the labour force. If the withdrawal of older workers from the labour force is involuntary, and basically attributable to their belief that no jobs are available, economic expansion would entice them back into the labour market and wage rates would remain comparatively stable. On the other hand, "...if declining labour force participation rates in fact reflect voluntary retirement decisions ... increased labour

market demand would produce inflationary pressures on wages".

The paper presents some econometric models of labour force supply; that is, the conditions under which older workers choose to offer their services, or alternatively to retire. It uses a sample of about 9,600 workers (5,600 men and 4,000 women) aged 45 to 69 from the Labour Market Activity Survey (LMAS) dataset. Among the author's findings are the following:

- lack of jobs was a much greater influence than pension coverage on the decision of men aged 45 to 54 to retire; for older men aged 55 to 64, the two factors carried about equal weight;
- lack of jobs increases the annual rate of retirement by 0.19% among those 45-54 and by 0.71% among those 55-64; over five years this rate of withdrawal would reduce the total labour force participation rate by 4.5%;
- desired labour supply (the number of hours people want to work) drops significantly with age, university graduates have a higher desired labour supply than workers at any other educational level, and single women and married men want to work significantly more hours in the paid labour market than do married women and single men;
- previous labour supply models have indicated that Ontario residents want to work more hours than residents elsewhere (and hence are richer), but the author's model shows that people in all other regions (except Quebec) are prevented from working more hours by the lack of jobs, not by lack of desire.

The author concludes that although an accelerated rate of retirement affects only a few workers now, the social and economic

impact of these problems will grow as workers under 45, who account for 75% of paid working hours, enter their mid-50s and contemplate early retirement.

For copies of *Is it retirement or unemployment?*, please contact Cindy Sceviour at (613) 951-0294. □

Profile of adult education students being developed

Statistics Canada has just completed collecting data for the 1990 Adult Education and Training Survey (AETS). The purpose of the survey's sponsor, Employment and Immigration Canada, is to develop a data base on the incidence of Canadian adults who report taking education or training, why they do so, the nature of this education/training and the assistance they receive; their work status and, if employed, the size of the firm (based on the number of employees). The survey results should help policy developers understand how the growth of adult education relates to skills upgrading and job retraining.

The Adult Education and Training Survey was conducted as a supplement to the November 1990 Labour Force Survey (LFS); respondents in about 50,000 households were interviewed. (This is the third adult education survey to be "piggybacked" onto the LFS in recent years: the AETS is descended from the 1984 Adult Education Survey and the 1986 Adult Training Survey.) Respondents who had taken an educational or training course in the preceding 12 months were asked if their reasons for doing so were personal or employment-related; if their studies were part-time or full-time; whether the course was given through or by a university or college; the duration and subject matter of the last course taken (the field of specialization if they were enrolled in a full-time

program). Respondents also provided information on assistance they had received while on course, and who had provided it (for example, employer, self). Such assistance could have been financial, but also included non-monetary assistance such as paid or unpaid time off, purchase of course materials on the student's behalf, access to in-house training provided by the employer, and so on.

Those respondents who had wanted to take a course, but did not, were asked to identify the reasons why – whether they were constrained by family responsibilities, unavailability of subjects of interest to them, inconvenient location, having no time, and so on. All respondents, regardless of education/training activity in the preceding 12 months, were also asked if there was any job training they believed they needed for employment-related reasons, but did not take – for example, computer courses or project management – and the reasons for forgoing the necessary training.

Preliminary results of the Adult Education and Training Survey should be ready in late May or early June, 1991. For more information, contact Stephen Arrowsmith at (613) 951-4643. □

Earnings history and post-retirement mortality rates

The aging of the population has sparked controversial discussions about its implications for many social programs, but perhaps the most urgent debate concerns the impact of greater longevity of more people on the health care system and public pension plans.

The Analytical Studies Branch of Statistics Canada has recently released a study that contributes to the discussion. *Earnings and Death: Effects over a Quarter Century* – Research Paper No. 30 – studies

mortality rates of men over the age of 65 and links them to employment income earned over the 10 to 20 years before retirement. The four authors – Michael Wolfson, Geoff Rowe, Jane Gentleman and Monica Tomiak – conclude that "higher earnings for males in late middle age are associated with significantly lower mortality two decades later".

The data used in the study are drawn from the administrative records of the Canada Pension Plan (CPP); the data are of high quality and cover all Canadians outside Quebec (which has the QPP) since the plan's implementation in 1966. The analysis is restricted to over 545,000 men who were 65 in or after September 1979. The cut-off point was September 30, 1988, by which time 10% of the sample population had died. The authors acquired a minimum of 13 complete years of earnings data (1966-1978) and tracked the subjects over the entire 23-year period (1966-1988).

The results show a very clear and steadily declining mortality rate for men aged 65 to 70 as their earned income before retirement rises. One common explanation for this observation is that chronic illness cuts back on pre-retirement income and then claims its victim after he retires; however, the authors contend that this hypothesis does not seem to be fully supported by the data, and that other factors must also be at work.

A number of factors are statistically significant in predicting mortality rates. These factors include average earnings, whether disability benefits have ever been claimed, marital status, age at which earnings ceased and work interruptions. In terms of the relative risk of death, pre-retirement average earnings, marital status and age at retirement had the same magnitudes of impact on mortality as the effect of smoking or high cholesterol levels on the risk of heart attack.

The authors observe that the evidence that higher-income individuals live longer raises "questions about the efficacy of the current health insurance system...On the one hand, the health care system might not be offering equal access given need... Alternatively, there may be aspects of lifestyle, work place, or home that vary systematically with earnings...that are not affected by the services offered by the health care system."

A second important point of public policy concern identified by the authors is the financing arrangements for the CPP: if higher-income individuals live longer and collect pensions for more years, a public pension plan in which contributions are based on earnings may not be as progressive as its originators thought.

For free copies of *Earnings and Death*, Research Paper No. 30, please contact Marie-Claire Couture at (613) 951-3778. □

Managing human resources in a high-tech world

At the start of a decade in which new technology is touted as the key to international success, the Economic Council of Canada has published a report reminding businesses that the human factor is critical to successful technology upgrading. In *Two Steps Forward*, the Council takes the view that if Canada's economic future depends on our ability to innovate, then innovation depends on "working smarter" with both machines and people.

The Council arrives at its conclusion after reviewing a number of studies and reports on these issues. The recently released *Two Steps Forward* presents a series of case studies conducted between 1985 and 1987. It suggests that technological change will precipitate profound socio-

economic change within a firm and that, depending on the way new equipment is introduced, workers' attitudes can either improve its productivity or render it ineffective.

In nine chapters examining the integration of new technology with people, the authors identify some features common to successful implementation: planning for the social as well as the technical change, developing tasks and jobs that allow workers to make decisions, and encouraging a process that allows everyone involved to influence the introduction of new machinery.

The case studies cover the reaction to new technology in heavy manufacturing, services, offices and hi-tech industries; and they examine a panoply of methods used to secure worker cooperation and support, from joint worker-manager planning/implementation teams and collective bargaining to gain-sharing plans.

Although the report emphasizes that new technologies need not threaten existing jobs, two chapters remind readers that they can also create new jobs and opportunities for those who have been marginalized; that is, clerical workers (mainly women) and the disabled.

And because failure can be just as instructive as success, the chapter entitled "Not in our best interest" analyzes why the modernization plans of five manufacturing firms went astray. It should not be surprising that these cases support the Council's contention that technological advances cannot be fully exploited without simultaneous management and organizational changes in a firm's approach to worker relations.

Two Steps Forward is available for \$5.95 per copy from the Publishing Centre, Supply and Services Canada, Ottawa K1A 0S9. Orders can also be sent by FAX (819) 994-1498 or telephone (819) 956-4802. A shipping and handling charge of \$3.50 is

applied to all orders up to \$25.00. Some major bookstores in some urban centres also carry copies of the report. □

Shortage of good workers in high-tech industries

Released at the same time as the Economic Council's *Two Steps Forward*, and lending weight to its arguments that human resource innovation must accompany technological innovation, is a survey by the Canadian Labour Market and Productivity Centre (CLMPC), a joint business and labour research organization.

The report is based on interviews conducted with 822 firms in 16 high-tech industries identified by CLMPC and points to the human resources difficulties in the sector. High-tech sales growth outperformed GDP growth in 1989 by a ratio of 2:1 and is expected to do the same in 1990; however, firms are having trouble recruiting and retaining employees.

The CLMPC estimates that employment growth in high-tech will reach 3.8% by the end of 1991, almost four times the growth predicted for the economy as a whole, and yet over one-third of the firms in the sample were unable to hire the additional staff they needed because candidates with the necessary qualifications were not available. In fact, 55% of firms had trouble recruiting and retaining professional, scientific and technical staff, while 34% had difficulties obtaining skilled tradespeople.

A shortage of properly qualified people would not appear to be the fault of the educational system. Most firms believe that the training provided by postsecondary institutions is adequate for the needs of their work forces: 73% were satisfied with colleges and vocational schools and 83% with universities. In addition, according to the report, many firms provide formal training

to their employees – 47% in total, although the percentage is twice that, at 93%, for large firms (more than 1,000 employees).

For further information, contact Ellen Wathen at the Canadian Labour Market and Productivity Centre, (613) 234-0505. □

Forum on pay equity examines progress so far

Report by Christopher Jackson
Labour and Household Surveys Analysis Division

In June 1990, Queen's University hosted a Policy Forum on Pay Equity. Attended by business, labour, academics and individuals involved in the pay equity process, the forum participants exchanged information and ideas regarding Ontario's pay equity policy. The forum addressed three broad topics: design and legal aspects of the legislation, the potential wage and employment effects, and implementation issues.

Ontario's 1988 Pay Equity Act is widely recognized as being the most comprehensive "equal pay for work of equal value" legislation in North America. Designed to narrow the gap between male and female wages, the Act requires public and private sector employers (firms with 10 or more employees) to adopt "gender neutral" job evaluation practices. (Job evaluation typically involves assigning scores to job characteristics and requirements such as skill, effort, responsibility and working conditions, although the methods used range from the "looks equal to me" approach to sophisticated statistical techniques.) If it is demonstrated that employees in comparable male-dominated job classes and female-dominated job classes perform work of "equal value", then the employer (with some exceptions) is required to pay those employees the same wages.

Panelists at the forum discussed design and legal problems with the Act such as:

- pay equity plans apply within firms, but part of the male/female wage differential is due to concentration of females in low-paying firms and males in high-paying firms;
- situations in which there may be no male comparator jobs to jobs considered predominantly female and, hence, no way of making pay equity adjustments for women in these jobs;
- the several allowable exceptions which employers could use as "loopholes"; for example, seniority systems, red-circling, merit pay systems and casual employment;
- the legal meaning of terms such as "employer" and "gender neutrality", terms which are not defined in the Act.

One of the crucial issues forum participants identified was the allocation of sufficient resources (including time) to the training of job evaluators and the design of pay equity plans. Others emphasized the need for communication, suggesting that the public debate on pay equity has fostered confusion and misunderstanding, and has unduly raised the expectations of working women.

Equal pay for work of equal value was recognized in Quebec's Charter of Human Rights and Freedoms (1975) and in 1977 this principle was incorporated into the Canadian Human Rights Act. To date, most jurisdictions in Canada have some form of "equal pay for work of equal value" legislation, but only Ontario, Manitoba, Nova Scotia, New Brunswick and Prince Edward Island have enacted pay equity legislation. The remaining provinces recognize the principle of "equal pay for work of equal value" in employment standards legislation and/or provincial

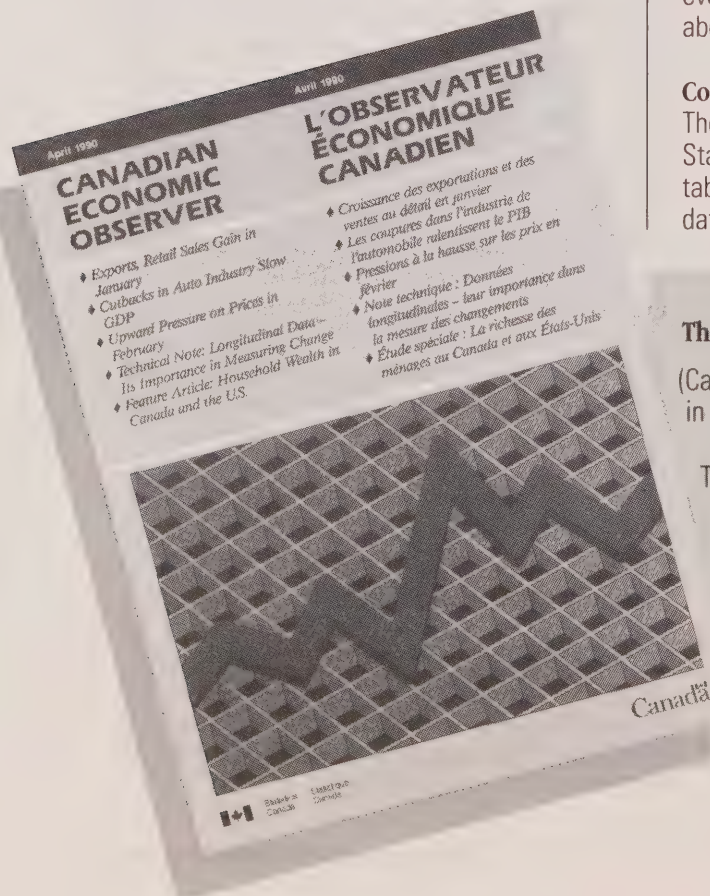
human rights codes. (Experts in this area draw distinctions between "pay equity", "equal pay for work of equal value" and "comparable worth". The differences are subtle, and in practice are not important.)

There is scant information available on the effects of pay equity in Canada. However, evidence of the actual and likely effects of pay equity is available from foreign sources. The results of several U.S. studies are somewhat mixed, indicating increases in the relative female/ male wage ranging from 5% to 17% and decreases in female employment ranging from 1% to 7%. However, the studies are not really comparable; they include pure simulation studies of the impacts of hypothetical pay equity plans and analyses of actual pay equity plans introduced at the state level. Research on the Australian experience with pay equity indicated that long-run effects on both wages and employment are negligible.

The implementation process in Ontario is just underway and it will take several years before smaller firms make their final pay equity adjustments. Public sector employers and employers of 500 or more employees were required to meet a January 1990 deadline for submitting pay equity plans. Smaller private sector employers face deadlines that are fast approaching: firms with fewer than 500 employees must post their plans beginning in January 1991 and no later than January 1993. Already, employers are falling behind schedule; apparently, they often underestimate the amount of time required to develop a plan.

Proceedings of the Forum are scheduled for publication in late 1990. Copies can be ordered for \$6.00 (including shipping and handling) from Sharon Sullivan of the John Deutsch Institute at (613) 545-2294, or by writing to the John Deutsch Institute for the Study of Economic Policy, Department of Economics, Queen's University, Kingston, Ontario, K7L 3N6. □

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Key labour and income facts

The following selection of labour and income indicators is drawn from 11 sources and includes published and unpublished annual data. The first 53 indicators appear in every issue and the remainder address a different topic each time.

The latest available annual data are always shown; as results become available, the indicators are updated so that every issue contains new data. An indicator updated since the last issue is "flagged" with an asterisk.

Data sources

The indicators are derived from the following sources:

- | | |
|-----------|---|
| 1-11 & 15 | Labour Force Survey
Frequency: Monthly
Contact: Ken Bennett (613) 951-4720 |
| 12-14 | Labour Market Activity Survey
Frequency: Annual
Contact: Richard Veevers (613) 951-4617 |
| 16 | Absence from Work Survey
Frequency: Annual
Contact: Denis Lefebvre (613) 951-4600 |
| 17 | Workers' Compensation Statistics
Frequency: Annual
Contact: Joanne Proulx (613) 951-4040 |
| 18 | Help-wanted Index
Frequency: Monthly
Contact: André Picard (613) 951-4045 |
| 19-21 | Unemployment Insurance Statistics
Frequency: Monthly
Contact: André Picard (613) 951-4045 |
| 22-29 | Survey of Employment, Payrolls and Hours
Frequency: Monthly
Contact: Howard Krebs (613) 951-4063 |

- | | |
|-------|---|
| 30-32 | Labour Canada, Major Wage Settlements
Frequency: Quarterly
Contact: Gilles Léger (819) 953-4234 |
| 33-35 | Labour Income (Revenue Canada Taxation-based statistics, Survey of Employment, Payrolls and Hours and other surveys)
Frequency: Quarterly
Contact: Ed Bunko (613) 951-4048 |
| 36-46 | Survey of Consumer Finances
Frequency: Annual
Contact: Kevin Bishop (613) 951-2211 |
| 47-53 | Household Facilities and Equipment Survey
Frequency: Annual
Contact: Penny Barclay (613) 951-4634 |
| 54 | Small Area and Administrative Data Division
Frequency: Annual
Contact: Customer Services (613) 951-9720 |

Notes on the method of deriving certain indicators are given at the end of the table.

Additional data

The table provides at the most two years of data for each indicator. A longer time series (generally 10 years) for this set of indicators can be obtained on request on paper or diskette at a cost of \$50. (A more extensive explanation of the indicators is also available.) This 10-year data set will be updated annually in April. Contact: Gilles Myre (613) 951-4627.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Labour market							
1 Labour force	'000	1988	13,275	231	62	408	318
		1989	13,503	238	63	414	325
Change	%		1.7	3.2	2.6	1.4	2.1
2 Participation rate	%	1988	66.7	54.6	64.0	60.8	58.8
		1989	67.0	55.7	65.0	61.2	59.5
3 Employed	'000	1988	12,245	193	54	366	280
		1989	12,486	201	54	373	284
Change	%		2.0	4.0	—	1.8	1.6
4 Proportion of employed working part-time	%	1988	15.4	11.2	15.0	15.5	15.4
		1989	15.1	11.5	15.7	16.0	14.9
5 Proportion of part-timers wanting full-time work	%	1988	23.7	58.8	34.5	35.5	36.4
		1989	22.2	55.1	36.1	31.5	37.5
6 Unemployed	'000	1988	1,031	38	8	42	38
		1989	1,018	38	9	41	41
Change	%		-1.3	—	11.4	-1.8	6.1
7 Official unemployment rate	%	1988	7.8	16.4	13.0	10.2	12.0
		1989	7.5	15.8	14.1	9.9	12.5
Alternative measures of unemployment							
8 Unemployed 14 or more weeks as a proportion of the labour force	%	1988	3.1	7.7	5.2	4.2	4.8
		1989	2.9	6.8	5.3	3.8	4.9
9 Unemployment rate:							
— of persons heading families with children under age 16	%	1988	6.9	15.8	13.7	9.6	11.2
		1989	6.8	15.6	14.2	9.2	11.8
— excluding full-time students	%	1988	7.6	16.6	13.4	10.0	11.9
		1989	7.4	15.8	14.6	9.8	12.4
— including full-time members of the Canadian Armed Forces	%	1988	7.7	16.4	12.8	9.9	11.8
		1989	7.5	15.7	13.9	9.6	12.3
— of the full-time labour force	%	1988	9.4	19.3	16.0	12.7	14.6
		1989	9.0	18.6	17.4	12.1	15.0
— of the part-time labour force	%	1988	9.8	17.1	7.2	12.8	13.2
		1989	9.7	15.8	8.2	12.3	14.4
— including persons on the margins of the labour force	%	1988	8.5	20.2	15.0	11.1	14.0
		1989	8.2	18.9	16.1	10.8	14.1
10 Underutilization rate based on hours lost through unemployment and underemployment	%	1988	9.9	20.1	16.5	13.4	15.2
		1989	9.5	19.3	17.8	12.8	15.6
11 Proportion unemployed 6 months or longer	%	1988	20.2	23.9	16.2	21.0	19.9
		1989	20.1	21.3	14.1	18.0	19.2

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
3,311	5,118	535	488	1,290	1,514	..	..	1988	'000	1
3,343	5,214	538	482	1,308	1,578	..	..	1989		
0.9	1.9	0.6	-1.1	1.4	4.2	..	..		%
64.0	69.6	66.7	66.4	72.4	65.7	..	..	1988	%	2
64.0	69.8	67.0	66.2	72.4	66.8	..	..	1989		
3,001	4,862	494	451	1,187	1,358	..	..	1988	'000	3
3,031	4,949	498	446	1,214	1,435	..	..	1989		
1.0	1.8	0.9	-1.1	2.3	5.7	..	..		%
13.6	15.6	16.9	17.1	15.5	17.9	..	..	1988	%	4
13.5	15.5	17.2	16.6	15.3	16.2	..	..	1989		
32.6	15.3	21.7	26.5	20.4	28.6	..	..	1988	%	5
31.8	13.5	21.9	27.9	19.3	25.8	..	..	1989		
311	256	42	37	103	157	..	..	1988	'000	6
311	264	41	36	94	144	..	..	1989		
-	3.2	-2.5	-2.1	-8.9	-8.3	..	..		%
9.4	5.0	7.8	7.5	8.0	10.3	..	..	1988	%	7
9.3	5.1	7.5	7.4	7.2	9.1	..	..	1989		
4.4	1.5	2.9	3.1	3.0	4.4	..	..	1988	%	8
4.3	1.5	3.0	3.1	2.5	3.6	..	..	1989		
										9
8.1	4.4	6.2	6.5	7.3	9.4	..	..	1988	%	
7.8	4.7	6.0	7.4	6.5	8.3	..	..	1989		
9.3	4.7	7.5	7.4	7.8	10.3	..	..	1988	%	
9.3	4.9	7.3	7.3	7.0	8.9	..	..	1989		
9.4	5.0	7.7	7.5	7.9	10.3	..	..	1988	%	
9.3	5.0	7.5	7.4	7.1	9.0	..	..	1989		
11.5	5.8	9.2	9.6	9.2	12.8	..	..	1988	%	
11.3	5.8	9.2	9.6	8.3	10.8	..	..	1989		
10.6	8.2	10.9	9.4	11.2	11.2	..	..	1988	%	
10.7	8.0	9.8	9.7	9.9	12.3	..	..	1989		
10.6	5.3	8.3	8.0	8.3	10.8	..	..	1988	%	
10.5	5.3	8.0	8.0	7.5	9.5	..	..	1989		
11.9	6.3	9.9	10.2	9.8	13.3	..	..	1988	%	10
11.7	6.2	9.7	10.2	8.9	11.3	..	..	1989		
25.7	12.7	16.6	20.8	19.0	22.0	..	..	1988	%	11
27.0	13.2	20.6	20.4	17.4	20.6	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Other labour market indicators								
12	Employed at some time in the year, male, age 16 to 69	'000	1986	7,560	151	36	235	191
	– as proportion of male population age 16 to 69	%		87.4	80.7	87.8	82.7	82.0
		'000	1987	7,584	152	36	235	191
		%		86.5	80.9	87.8	82.2	81.6
	Employed at some time in the year, female, age 16 to 69	'000	1986	5,987	109	29	187	149
	– as proportion of female population age 16 to 69	%		67.4	58.0	69.0	62.1	61.8
		'000	1987	6,042	110	30	191	153
		%		67.1	57.9	71.4	63.0	63.0
13	Unemployed at some time in the year, male, age 16 to 69	'000	1986	1,601	63	11	63	56
	– as proportion of male population age 16 to 69	%		18.5	33.7	26.8	22.2	24.0
		'000	1987	1,497	59	11	59	59
		%		17.1	31.4	26.8	20.6	25.2
	Unemployed at some time in the year, female, age 16 to 69	'000	1986	1,441	45	9	58	46
	– as proportion of female population age 16 to 69	%		16.2	23.9	21.4	19.3	19.1
		'000	1987	1,345	46	9	55	48
		%		14.9	24.2	21.4	18.2	19.8
14	Full-time, full-year male paid workers	'000	1986	4,039	53	14	117	90
			1987	4,035	55	14	115	89
	Full-time, full-year female paid workers	'000	1986	2,468	35	10	71	53
			1987	2,528	36	11	74	52
15	Days lost per full-time worker per year through illness or for personal reasons	days	1988	9.2	9.1	6.7	8.6	8.7
			1989	9.4	9.6	8.1	8.6	9.6
16	Proportion of paid workers absent two or more consecutive weeks because of illness or accident	%	1988	6.4	5.1	5.7	4.7	6.0
			1989	6.7	6.2	5.2	5.4	7.4
17	Workers receiving workers' compensation for time-loss injuries	'000	1987	603	9	2	12	11
	Change	%	1988	618	10	2	11	12
				2.6	11.3	17.7	-4.4	11.0
18	Help-wanted index (1981 = 100)		1988	149	180			
			1989	152	196			

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
1,928	2,850	306	289	733	843	..	..	1986	'000	12
84.5	90.0	89.0	90.0	90.4	85.6	..	..		%
1,921	2,886	305	280	718	859	..	..	1987	'000	
83.5	89.2	88.2	87.5	88.3	85.6	..	..		%
1,434	2,331	256	229	601	661	..	..	1986	'000	
60.6	71.4	72.1	71.6	74.9	65.8	..	..		%
1,434	2,367	264	219	592	682	..	..	1987	'000	
60.2	71.2	72.7	68.7	73.4	66.7	..	..		%
459	457	58	50	167	217	..	..	1986	'000	13
20.1	14.4	16.9	15.6	20.6	22.0	..	..		%
434	432	57	42	150	193	..	..	1987	'000	
18.9	13.3	16.5	13.1	18.5	19.2	..	..		%
377	482	49	44	139	192	..	..	1986	'000	
15.9	14.8	13.8	13.8	17.3	19.1	..	..		%
375	424	51	40	127	171	..	..	1987	'000	
15.7	12.8	14.0	12.5	15.7	16.7	..	..		%
1,013	1,682	154	130	370	416	..	..	1986	'000	14
1,028	1,666	148	128	370	423	..	..	1987		
632	998	109	80	237	242	..	..	1986	'000	
610	1,052	107	81	239	265	..	..	1987		
9.5	9.7	9.7	7.5	8.3	7.7	..	..	1988	days	15
10.2	9.6	8.8	8.6	8.2	8.4	..	..	1989		
8.1	6.2	6.2	5.2	5.5	5.5	..	..	1988	%	16
7.7	6.8	5.0	5.4	5.1	6.4	..	..	1989		
217	205	23	16	41	66	..	1	1987	'000	17
218	208	23	15	43	73	..	1	1988		
0.6	1.6	0.5	-5.3	5.1	10.9	..	19.0		%	
172	180	82			96	..	..	1988		18
173	167	90			128	..	..	1989		

See notes at end of table.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Unemployment insurance							
*19 Total beneficiaries	'000	1988	1,015	71	13	50	57
		1989	1,030	76	14	53	58
Change	%		1.5	6.6	6.8	5.3	0.4
20 Total beneficiaries as a proportion of contributors	%	1987	8.2	28.4	22.0	13.0	17.9
		1988	7.9	28.7	21.2	12.4	17.6
*21 Regular beneficiaries without reported earnings	'000	1988	780	58	10	38	47
		1989	785	61	10	39	47
Change	%		0.6	5.7	5.8	1.6	-1.1
Earnings (including overtime) and hours							
22 Average weekly earnings in current dollars	\$	1988	463.80	443.99	379.26	417.92	421.16
		1989	486.87	465.80	400.82	432.86	442.80
Change	%		5.0	4.9	5.7	3.6	5.1
23 Average weekly earnings in 1981 dollars	\$	1988	322.53	320.57	278.05	298.09	298.27
		1989	322.43	324.83	283.06	295.47	299.59
Change	%		--	1.3	1.8	-0.9	0.4
24 Average weekly earnings of salaried employees in current dollars	\$	1988	568.12	524.26	493.20	516.66	523.26
		1989	598.87	559.86	522.94	537.24	552.16
Change	%		5.4	6.8	6.0	4.0	5.5
25 Average weekly earnings of salaried employees in 1981 dollars	\$	1988	395.08	378.53	361.58	368.52	370.58
		1989	396.60	390.42	369.31	366.72	373.59
Change	%		0.4	3.1	2.1	-0.5	0.8
26 Average weekly earnings of hourly paid employees in current dollars	\$	1988	370.41	353.66	256.22	330.64	342.13
		1989	388.20	363.16	264.60	341.66	362.48
Change	%		4.8	2.7	3.3	3.3	6.0
27 Average weekly earnings of hourly paid employees in 1981 dollars	\$	1988	257.59	255.35	187.84	235.83	242.30
		1989	257.09	253.25	186.86	233.22	245.25
Change	%		-0.2	-0.8	-0.5	-1.1	1.2
28 Average weekly hours of hourly paid employees	hrs	1988	32.1	35.5	32.6	33.0	34.0
		1989	31.8	34.8	31.7	32.7	34.1
29 Average weekly overtime hours of hourly paid employees	hrs	1988	1.1	1.7	0.5	0.7	0.9
		1989	1.2	1.6	0.4	0.8	1.0
Major wage settlements							
30 Number of agreements		1988	543	8	2	7	12
		1989	438	7	4	15	5
31 Number of employees	'000	1988	1,192	22	5	5	14
		1989	983	11	3	19	12
32 Increase in base rate on annual basis	%	1988	4.4	4.1	4.8	5.1	4.1
		1989	5.3	5.7	4.7	5.5	4.5

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
323	216	35	29	78	139	2	2	1988	'000	19
337	214	35	29	78	134	2	2	1989		
4.3	-1.2	2.1	-0.7	-0.8	-3.4	3.6	-1.9		%	
10.2	4.6	6.8	7.8	7.7	10.6	10.5	5.4	1987	%	20
10.2	4.2	7.1	7.5	6.5	9.9	9.8	4.8	1988		
259	151	26	22	60	106	1	1	1988	'000	21
270	147	26	22	59	101	1	1	1989		
4.4	-2.7	1.2	-0.5	-1.4	-5.8	-2.5	-8.3		%	
454.01	482.67	422.05	411.30	462.76	466.52	556.24	621.30	1988	\$	22
472.82	509.08	445.08	425.99	484.47	491.63	585.91	663.86	1989		
4.1	5.5	5.5	3.6	4.7	5.4	5.3	6.9		%	
313.11	327.46	297.01	291.91	338.27	339.78	..	..	1988	\$	23
312.71	326.33	299.11	289.59	339.98	342.60	..	..	1989		
-0.1	-0.3	0.7	-0.8	0.5	0.8	..	..		%
540.82	595.75	536.17	527.58	585.04	564.90	666.78	695.96	1988	\$	24
564.69	631.12	562.52	558.45	617.83	594.35	713.95	728.63	1989		
4.4	5.9	4.9	5.9	5.6	5.2	7.1	4.7		%	
372.98	404.17	377.32	374.44	427.66	411.43	..	..	1988	\$	25
373.47	404.56	378.04	379.64	433.56	414.18	..	..	1989		
0.1	0.1	0.2	1.4	1.4	0.7	..	..		%
372.12	384.66	321.24	301.31	340.60	390.19	437.86	521.88	1988	\$	26
387.87	403.25	345.85	309.83	356.00	412.73	439.74	568.71	1989		
4.2	4.8	7.7	2.8	4.5	5.8	0.4	9.0		%	
256.63	260.96	226.07	213.85	248.98	284.19	..	..	1988	\$	27
256.53	258.49	232.43	210.63	249.82	287.62	..	..	1989		
--	-0.9	2.8	-1.5	0.3	1.2	..	..		%
32.8	32.5	30.7	28.7	30.8	30.2	32.9	33.3	1988	hrs	28
32.6	32.0	31.2	28.8	30.5	30.5	32.1	33.8	1989		
1.0	1.3	0.8	0.8	1.4	0.9	2.8	4.9	1988	hrs	29
1.0	1.3	0.9	0.8	1.5	1.1	1.9	3.4	1989		
70	187	38	16	60	67	..	..	1988		30
37	155	7	16	51	49	..	..	1989		
204	323	66	62	132	145	..	..	1988	'000	31
209	237	10	21	83	106	..	..	1989		
4.3	5.3	3.7	2.6	3.1	5.2	..	..	1988	%	32
5.3	6.4	4.6	2.9	3.9	7.0	..	..	1989		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
Labour income								
*33	Labour income in current dollars	\$ million	1988	325.2	4.5	1.0	8.2	6.3
			1989	354.9	4.8	1.0	8.8	6.9
	Change	%		9.1	6.8	7.7	7.2	8.2
*34	Labour income per employee in current dollars	\$	1988	30,327	26,312	22,360	25,594	25,402
			1989	32,326	26,715	23,481	26,798	27,007
	Change	%		6.6	1.5	5.0	4.7	6.3
*35	Labour income per employee in 1981 dollars	\$	1988	21,090	18,998	16,393	18,256	17,990
			1989	21,408	18,630	16,583	18,292	18,272
	Change	%		1.5	-1.9	1.2	0.2	1.6
36	Net income from self-employment as a proportion of money income	%	1986	6.0	5.7	8.6	6.2	5.4
			1987	6.7	4.9	12.4	6.6	4.3
Earnings of full-time, full-year workers								
37	Average earnings of men working full-time, full-year	\$	1987	31,900	27,700	25,200	30,300	27,600
			1988	33,600	27,200	23,600	30,500	29,100
	Change	%		5.3	9.0	-6.3	0.5	5.3
38	Average earnings of women working full-time, full-year	\$	1987	21,000	17,900	17,900	18,500	18,100
			1988	21,900	20,400	16,900	19,600	20,200
	Change	%		4.3	14.3	-5.5	6.1	11.6
39	Ratio of female to male earnings	%	1987	65.9	64.5	71.1	61.0	65.6
			1988	65.3	75.1	71.7	64.4	69.5
Family income								
40	Average family income	\$	1987	43,600	33,700	34,800	38,100	35,200
			1988	46,200	36,100	34,500	39,700	37,300
41	Median family income	\$	1987	38,900	29,800	30,900	34,300	31,800
			1988	41,200	32,900	30,700	36,400	33,300
42	Average income of unattached individuals	\$	1987	18,700	14,600	13,800	15,900	13,700
			1988	19,600	17,000	14,400	16,000	16,100
43	Median income of unattached individuals	\$	1987	14,400	10,000	10,600	11,600	10,500
			1988	15,000	12,900	12,000	11,300	12,100
44	Average family taxes	\$	1987	8,100	5,100	5,000	6,600	5,500
			1988	8,600	5,100	4,700	6,700	5,800
45	Average family income after tax	\$	1987	35,500	28,600	29,800	31,600	29,700
			1988	37,600	30,900	29,800	33,000	31,500

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
77.5	140.3	11.1	8.6	30.0	35.9	.4	1.0	1988	\$ million	33
83.2	154.7	11.7	9.0	32.6	40.3	.4	1.0	1989		
7.3	10.2	5.6	4.3	8.5	12.3	7.0	6.2			%
29,183	32,434	26,601	24,969	29,651	30,336	..	..	1988	\$	34
30,831	35,124	27,749	26,470	31,101	31,987	..	..	1989		
5.7	8.3	4.3	6.0	4.9	5.4	..	..			%
20,126	22,004	18,720	17,721	21,675	22,095	..	..	1988	\$	35
20,391	22,516	18,648	17,995	21,825	22,291	..	..	1989		
1.3	2.3	-0.4	1.5	0.7	0.9	..	..			%
5.2	5.7	6.9	12.3	5.7	6.6	..	..	1986	%	36
5.8	6.2	7.6	13.4	7.9	7.3	..	..	1987		
30,700	33,600	27,900	27,000	32,000	32,900	..	..	1987	\$	37
31,700	35,900	29,700	28,400	33,800	34,500	..	..	1988		
3.4	6.8	6.5	5.2	5.6	4.8	..	..			%
20,500	22,000	19,200	17,900	20,800	21,900	..	..	1987	\$	38
20,900	23,300	20,200	19,200	22,100	21,300	..	..	1988		
2.1	5.8	5.4	7.1	6.0	-2.8	..	..			%
66.8	65.4	68.6	66.3	65.1	66.7	..	..	1987	%	39
65.9	64.8	67.9	67.5	65.3	61.8	..	..	1988		
40,100	49,000	39,700	39,100	44,400	42,600	..	..	1987	\$	40
41,300	52,800	43,100	40,400	46,300	45,300	..	..	1988		
35,500	43,800	35,800	35,100	40,000	38,000	..	..	1987	\$	41
36,900	47,300	37,400	35,400	41,700	42,000	..	..	1988		
17,100	20,700	16,900	16,600	19,200	18,900	..	..	1987	\$	42
17,400	21,700	17,100	17,100	20,500	21,000	..	..	1988		
12,600	16,200	12,500	12,900	15,000	15,900	..	..	1987	\$	43
12,100	17,400	13,800	13,200	15,700	17,300	..	..	1988		
7,700	9,300	6,700	6,500	8,400	7,800	..	..	1987	\$	44
7,900	10,100	7,700	7,000	8,300	8,100	..	..	1988		
32,400	39,700	34,500	33,000	32,600	36,000	..	..	1987	\$	45
33,500	42,700	35,400	33,300	38,000	37,200	..	..	1988		

See notes at end of table.

Key labour and income facts

No.		Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
46	Proportion below the low income cut-off (1978 base):							
-	families	%	1987 1988	11.3 10.5	18.9 15.5	10.0 10.0	11.7 10.8	14.4 12.6
-	unattached individuals	%	1987 1988	33.5 33.1	45.3 35.5	32.9 33.2	37.7 39.4	45.6 35.7
-	persons (population)	%	1987 1988	14.1 13.1	20.8 16.7	12.9 12.3	14.7 13.4	16.9 14.5
-	children (less than 16 years)	%	1987 1988	16.9 15.4	25.9 20.7	16.1 12.6	16.8 15.2	20.5 18.3
-	elderly (65 years and over)	%	1987 1988	17.3 17.2	20.4 19.2	12.3 17.5	15.8 16.9	18.2 15.0
Households and dwellings								
47	Average household income	\$	1987 1988	38,500 40,700	31,700 34,200	31,300 31,100	34,100 35,400	31,900 34,300
48	Proportion of households with:							
-	VCRs	%	1988 1989	52.0 58.8	50.0 59.9	43.2 50.0	51.8 62.1	51.3 57.0
-	microwaves	%	1988 1989	53.8 63.4	34.3 52.1	45.5 47.7	48.5 62.5	48.3 59.9
-	two or more automobiles	%	1988 1989	25.1 25.0	14.5 12.6	22.7 22.7	18.4 21.0	20.6 18.6
-	vans and trucks	%	1988 1989	24.3 25.5	31.3 32.3	31.8 31.8	25.6 28.2	34.9 34.3
-	air conditioners	%	1988 1989	20.8 24.6	... ...	-- ...	3.6 2.6	4.6 5.8
49	Proportion of owner-occupied dwellings	%	1988 1989	62.5 63.3	77.1 79.6	75.0 75.0	70.9 71.5	76.5 75.2
50	Proportion of all owner-occupied dwellings that are mortgage-free	%	1988 1989	50.0 50.6	72.7 69.9	54.5 54.5	56.2 56.6	56.0 59.3
51	Number of occupied dwellings in need of repair	'000	1988 1989	2,469 2,369	56 52	14 14	110 94	75 79
52	Dwellings in need of repair as a proportion of all occupied dwellings	%	1988 1989	26.7 25.0	33.7 31.1	31.8 31.8	35.6 30.4	31.5 32.6
53	Median rent-to-income ratio	%	1988 1989	21 21	18 17	22 23	23 21	22 19

See notes at end of table.

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit	No.
										46
13.9	7.8	11.9	12.4	12.7	13.0	..	..	1987	%	
13.5	7.5	11.1	13.6	10.7	10.1	..	..	1988	%	
40.7	28.5	35.9	33.4	31.5	31.2	..	..	1987	%	
42.7	26.9	33.5	29.3	30.8	30.6	..	..	1988	%	
16.8	10.3	15.9	15.9	15.6	15.7	..	..	1987	%	
16.8	9.5	14.8	16.8	13.8	13.2	..	..	1988	%	
19.0	12.3	21.9	18.9	19.9	18.6	..	..	1987	%	
17.2	11.9	19.7	22.6	16.9	15.2	..	..	1988	%	
25.2	12.7	15.4	13.9	13.8	19.9	..	..	1987	%	
25.2	12.6	16.0	13.4	15.6	18.4	..	..	1988	%	
35,600	43,400	34,300	33,800	38,900	37,000	..	..	1987	\$	47
36,000	46,900	37,000	35,100	41,200	39,100	..	..	1988	\$	
										48
49.0	54.2	49.7	47.2	58.0	50.7	..	..	1988	%	
54.4	62.1	56.7	53.4	64.0	57.3	..	..	1989	%	
49.0	54.6	55.3	64.0	64.9	55.0	..	..	1988	%	
59.6	64.5	65.8	71.2	71.8	62.2	..	..	1989	%	
21.7	28.3	22.6	24.3	30.1	24.7	..	..	1988	%	
19.9	29.3	21.9	24.6	29.4	25.7	..	..	1989	%	
14.6	20.1	31.1	45.3	40.4	32.4	..	..	1988	%	
15.6	21.7	32.1	44.1	41.6	34.0	..	..	1989	%	
13.1	35.6	39.5	27.7	7.8	6.9	..	..	1988	%	
14.7	43.8	43.9	31.0	8.6	7.4	..	..	1989	%	
55.3	63.2	66.1	70.9	63.9	63.0	..	..	1988	%	49
54.8	64.6	67.4	71.8	64.6	65.2	..	..	1989	%	
44.1	50.4	55.8	57.5	47.2	49.7	..	..	1988	%	50
46.9	49.4	55.4	61.1	48.3	50.2	..	..	1989	%	
565	930	122	100	218	279	..	..	1988	'000	51
572	817	113	101	238	287	..	..	1989	'000	
23.4	27.8	32.1	27.9	25.7	24.4	..	..	1988	%	52
22.8	24.0	29.5	28.2	27.5	24.1	..	..	1989	%	
20	20	23	23	22	23	..	..	1988	%	53
20	21	21	22	21	22	..	..	1989	%	

See notes at end of table.

Key labour and income facts

No.	Unit	Year	Canada	Nfld.	P.E.I.	N.S.	N.B.
*54 Labour force income profile							
Number of taxfilers	'000	1988	17,213	351	80	566	462
Income							
Number reporting	'000	1988	17,164	350	80	565	461
Amount	\$'000,000	1988	378,818	5,729	1,388	10,792	8,152
Median	\$	1988	17,200	12,200	13,800	15,000	13,700
Canadian index		1988	100.0	70.9	80.2	87.2	79.7
Labour force income:							
Number reporting	'000	1988	13,715	282	66	442	357
Amount	\$'000,000	1988	306,170	4,920	1,133	8,705	6,645
Employment income:							
Number reporting	'000	1988	13,526	274	65	435	349
Amount	\$'000,000	1988	296,171	4,206	1,003	8,209	6,061
Median	\$	1988	17,700	9,800	11,100	15,000	13,000
Canadian index		1988	100.0	55.4	62.7	84.7	73.4
Self-employment income:							
Number reporting	'000	1988	1,740	32	12	50	34
Amount	\$'000,000	1988	18,605	234	113	626	341
Unemployment insurance benefits:							
Number reporting	'000	1988	2,799	139	27	127	126
Amount	\$'000,000	1988	9,999	715	131	495	585
U.I. dependency ratio		1988	3.38	16.99	12.97	6.04	9.65
Canadian index		1988	100.0	502.7	383.7	178.7	285.5

Key labour and income facts

Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Year	Unit No.
54									
4,401	6,456	740	613	1,526	1,975	16	28	1988	'000
4,388	6,435	738	612	1,522	1,971	16	27	1988	'000
87,717	158,651	13,925	11,857	34,744	44,746	396	722	1988	\$'000,000
16,000	19,200	14,500	15,000	17,700	17,600	21,200	19,700	1988	\$
93.0	111.6	84.3	87.2	102.9	102.3	123.3	114.5	1988	
3,411	5,244	554	491	1,290	1,538	15	25	1988	'000
72,135	128,190	10,818	9,027	28,538	35,028	358	672	1988	\$'000,000
3,352	5,199	545	484	1,273	1,510	14	25	1988	'000
68,989	125,997	10,485	8,744	27,771	33,713	340	653	1988	\$'000,000
17,100	19,600	15,400	13,900	17,400	18,000	20,300	21,000	1988	\$
96.6	110.7	87.0	78.5	98.3	101.7	114.7	118.6	1988	
319	615	100	136	221	217	2	2	1988	'000
3,968	7,356	814	1,124	1,644	2,356	14	13	1988	\$'000,000
850	753	103	86	228	352	4	5	1988	'000
3,146	2,193	334	283	767	1,315	18	19	1988	\$'000,000
4.56	1.74	3.18	3.23	2.76	3.90	5.22	2.91	1988	
134.9	51.5	94.1	95.6	81.7	115.4	154.4	86.1	1988	

Key labour and income facts

Notes and definitions

No.

- 1 Persons aged 15 and over who are employed or unemployed.
- 2 Labour force as a proportion of the population aged 15 and over.
- 4 Persons who usually work less than 30 hours per week.
- 7 Unemployed as a proportion of the labour force.
- 8 This rate, and rates shown as Indicators 9 and 10, are described in *The Labour Force* (71-001), February 1987.
- 9 The full-time labour force includes persons working full-time, those working part-time involuntarily and unemployed persons seeking full-time work.

The part-time labour force includes persons working part-time voluntarily and unemployed persons seeking part-time work.

On the margins of the labour force includes persons not looking for work because they believe none is available or because they are waiting for recall or for replies from employers.

- 10 The rate shows hours lost through unemployment (unemployed multiplied by average actual weekly hours) and through underemployment (that is, short-time work schedules and involuntary part-time employment) as a proportion of hours worked plus hours lost.

No.

- 30 Data are for agreements involving bargaining units of 500 or more employees. Canada figures include workers covered by federal labour legislation plus agreements involving workers in more than one province.
- 33 Labour income comprises gross wages and salaries (including directors' fees, bonuses, commissions, gratuities, taxable allowances and retroactive pay) and supplementary labour income (payments made by employers for the benefit of employees, including contributions to health and welfare schemes, pension plans, workers' compensation and unemployment insurance).
- 34 Labour income per employee is calculated using LFS estimates of paid workers excluding those absent without pay.
- 44 For an explanation of the methodology underlying the low income cut-off, see *Income Distributions by Size in Canada* (13-207).
- 54 Data are derived from tax returns filed in the spring of the year following the reference year. The mailing address at the time of filing determines the province.

In the works

Here are some of the topics to be featured in upcoming issues of Perspectives on Labour and Income.

■ **The labour market: Year-end report**

A wrap-up of the changes and trends in the labour market in 1990.

■ **National Apprenticeship Survey**

A profile of current apprenticeship programs in Canada derived from the survey.

■ **Computers in the workplace**

From the office to the shop floors, computers are radically changing the work environment. This article provides an overview of how integral computers are to present day business.

■ **An interview with Gail Cook Johnson**

A Toronto human resource consultant talks about training and development issues in today's labour market and how Statistics Canada can play a role in understanding them.

■ **Single-industry towns**

Many remote communities are supported by one main industry, such as fishing, forestry or mining. This study will examine a group of selected single-industry towns over the 1971-1986 period.

■ **Discretionary spending**

After taxes, paying the mortgage, and taking the children to the orthodontist, who has any money left over? Some people do and this article takes a look at what they are spending their money on.

■ **The burden of unemployment**

The characteristics of the unemployed have changed drastically over the past 10 years. Today's unemployed are more likely to be older and to have been searching for work for a longer period.

■ **Canada/United States income comparisons**

This study offers a look at various income topics such as relative income shares, wives' contribution to family income and the male/female earnings ratios in these two countries.

■ **Dependence on government transfers**

In 1988, the federal government spent more than \$49 billion on social security programs, an increase of 166% since 1971.

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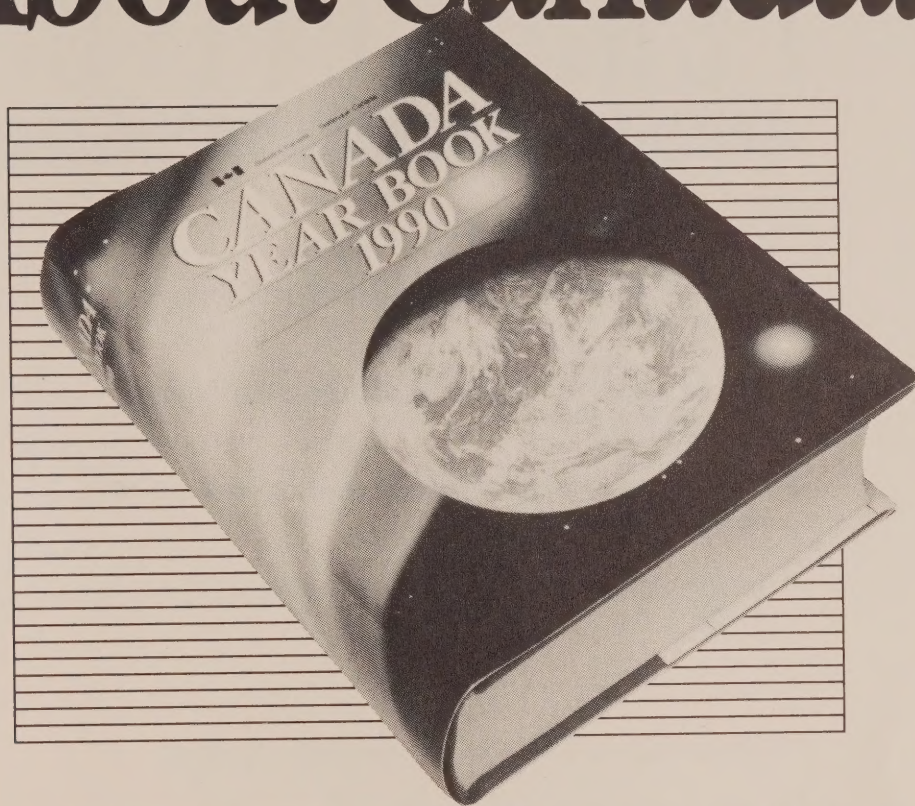
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